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ABSTRACT

A series of research studies, involving 1,841 high school students was conducted to develop a model to screen for cultural bias in the diagnostic process for those students with learning and behavior problems, both in and out of the special education program. A review of the literature looked at the factors of sex, ordinal place, father's occupation, one versus two parent families, and ethnic status. An initial study examined the classification of fathers' occupations and its relationship to achievement test scores. A second study attempted to describe the population of referred students in terms of the factors examined in the literature review. Among findings were that there were twice as many boys as girls referred for school problems, there was a sharp increase in Hispanic cases from 1961 through 1965, and there was decreasing proportions of first and middle children referred to psychological services whereas the proportion of younger children increased. Another study analyzed all items in the Skill Inventory Checklist which reflected personal interactions other than correct test reponses (negative response style, help seeking behavior, identification of self or others as problem solvers, and positive or ideal response style). The reliability of the Correct Knowledge Inventory (a checklist which consists of 24 content areas) was investigated. Finally, research was performed to classify finished case studies according to cultural themes or syndromes: masculinized/aggressive girl syndrome, helpless/handicapped boy syndrome, authoritarian/aggressive boy syndrome, and mothering/passive girl syndrome. Among conclusions are the following: sex of the student seemed to have less bearing on reasons for referral in biracial cases than those from single parent or one race homes, if the father's occupation was stable; close examination showed that many "learning disabled" students are able learners who lead complex lives outside the classroom and have highly skilled patterns which interfere with classroom expectations. Appendixes, which make up half the document, include a report of the preliminary study on fathers' occupations, a breakdown of the total population by fathers' occupations, a preliminary checklist for personal interaction variables, scoring instructions for the Correct Knowledge Checklist, and a sample case history. (SW)

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Assessing Learning Disabilities in Terms of Cultural Background

Helene F. Belz, PH.D.

Prepared Under Grant No. 43-69427-80-3293-7100 from the California State Department of Education

Psychological Services Department

East Side Union High School District

August 1, 1980

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FOREWORD

Statement of Funding:

The study reported here was part of a program of studies in Special Education in the Psychological Services Department of the East Side Union High School District.

The study was conducted during July 1, 1979 - June 30, 1980 under the auspices of the Special Studies supported by Grant No: 43-69427-80-3293-7100 between the California State Department of Education and the East Side Union High School District.

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Acknowledgements:

This project has had the benefit of a dedicated team of young professional people, each making a unique contribution. Throughout, we have been guided by the indispensable advice of Ellen Mandinach, our statistician. The model for assessing student's personal interactions with testers, and the detailed work of cataloging hundreds of their responses, is credited to Daryla Mangono, school psychologist. Credit for work on the Correct Knowledge Inventory goes to Noreen Henneberry, school psychologist, who prepared materials and supervised the scoring for our large sample of cases. The careful analysis

of cultural themes and their correlates, in case studies, is credited to Ann Nelson, anthropologist. Each of these contributions moved us one step closer to our goal of "culture-fair" assessment of student's problems in school.

Although no direct use is being made of copyrighted test materials, themselves, we acknowledge a debt to the Psychological Corporation for the material appearing in the categories on our cultural content inventory, and for the subtest structure of the skill inventory. The content categories and skills so defined are generalizable to other tests, but many of the observations relate directly to test responses from the Wechsler Intelligence Scale for Children and the Wechsler Adult Intelligence Scale. The forms we are using were reviewed by Ms. Mary Ferguson, representing the corporation, and are in compliance with copy right restrictions.

We also acknowledge advice and counsel from Dr. John F. Belz, MD. As a Fellow in the academies of Pediatrics, Psychiatry and Child Psychiatry, with broad experience in family practice, as well as in Public Health and on the academic and clinical faculties of the Stanford University Medical School, he is uniquely qualified to evaluate matters at the interface between our work on disabling effects of learned cultural patterns and what is known about disabilities from physiological, neurological and psychiatric standpoints.

It is important to recognize the nature of this interface. First, the present work addresses the cultural context in which both the physically handicapped and the non-handicapped child will develop; it is no way an "either-or" approach. Second, it can be shown that, without study of the contribution of learned cultural patterns to the developmental problems of people, there is unconscionable bias in practice with persons outside the practitioner's own cultural milieu.

However, this interface is also difficult to approach since, with the work of Binet and Freud, the question of causes for learning problems has long been so thoroughly steeped in medical theory that points raised about cultural components have begun to fare well in professional circles only recently. When making presentations, I regularly encounter such strong emotional reactions, and attempts to box our work into a clinical cubbyhole labelled "Behaviorist", that the help of my learned husband in keeping a balanced view is indispensable.

Finally, we gratefully acknowledge the dedication of the staff and leadership of the East Side Union High School District to a search for fair assessment practices which will, above all, lead to better understanding of the needs of our students, and of the pitfalls that await so many in the growing-up process.

Helene F. Belz

Helene F. Belz, Ph.D.

August, 1, 1980

ABSTRACT

This project is an intermediate step in on-going development of a culture-fair model for assessing the learning and behavior problems of adolescents. In this model, diagnosis is re-centered from the traditional focus on variables assumed to lie within the youth, to a focus on the youth as a person who is developing within a total "learning space." The learning space is defined as a set of interacting role-relations which includes marital and ethnic status of the parents, sex-typing of the student and other family members, the student"s ordinal place, and the father's occupation. Information, not only about the student, but also about the specific cultural and social patterns being transmitted to the student, is thus systematically sought and evaluated.

Applicable to the physiologically handicapped and non-handicapped alike, the model rests on hypotheses culled directly from long experience with testing and case histories of high school students in a large, multi-cultural school District, rather than from background literature. The hypotheses are: 1) In the absence of spcific interference due to gross physical impairment, the most probable explanation for a way of behaving is that it is learned. Cognitive styles are included. 2) Though a "growth," or "competence," motive is universal, the primary source of most human behavior is imitative. Thus, unless some more complex motivation is proved (not assumed), no meaning other than imitation of something that works for some observed model should be read into the gestures and problem behavior of a child. 3) In diagnosing a school problem, the possiblity that the child is projecting a whole set of responses learned in the context of family role-relationships onto a teacher or classroom situation which replicates the family role configurations in some way should have first priority. Moreover, it can be expected that such projection will intensify a) as the child's achievement motivation increases, b) if the child's first responses fail and the ambiguity of the teacher as a stimulus increases, or c) under probing of feelings and recall of past experience as "therapeutic" techniques.

To continue, 4) in the assessment of a skill, no more than one successful demonstration is needed to prove that the structures and faculties needed for the response are intact, and can be integrated. Failure to perform the response consistently, resulting in a low test score, shows the rate of performance, not the level of ability. A high score is diagnostic of both ability and rate of performance, and it indicates practice; but a low score is only diagnostic of the performance rate; a complete analysis of error is required for diagnosis of reasons for low performance. Such reasons are myriad. 5) The patterning of a set of subtest scores shows a profile of the skills a student is, and is not, practicing. Each subtest represents a task, and only its face validity is used in the interpretation of scores. 6) The general level of the profile as a whole is a measure of habitual attention to symbols and abstractions stored in the mind, in contrast to attention to stimuli in the immediate external environment. 7) Selective factors are at work in the growth and integration of learning. These selective "sets" stem, not only from interests and values, but also from largely unexplored inhibitions of one type of cognitive process by another with which it is not compatable (e.g., abstract thought versus attention to immediate external stimuli). 8) Re-analysis of the same set of test and performance data for a given student, if made from several different vantage points, will reveal conflicts and interactions not observable when different tests are given for each variable being assessed.

Over many years of work with this model, we have learned, step-by-step, how to classify the cultural themes in a student's productions, how to Q-sort projective material and personal interaction responses, how to recognize styles and misuse of skills in wrong responses, and how to identify imitative behavior and describe role-relationships. Also, through research, we know some of the effects of the role-relations mentioned above on the cognitive processes of academically successful students. We are now extending this research to students with problems. The specific focus of the present study, for which one year's funding was received from the State Department of Education, is on six areas of the model which were selected for refinement and validation during the 1979-80 school year. These were as follows:

1. A breakdown of fathers' Technology Group occupations into occupational subgroups according to their effects on offspring. This step was needed because 45% of the total population of students referred for problems had fathers in this one category of occupations. It was assumed that differential effects within that category would be found.

2. A description of the total population of students referred to psychological services for school problems was needed in order to determine the extent to which methods and findings could be generalized.

3. A review of changes in the population over the two decades during which students have been referred was needed.

4. Refinement of a checklist for personal interaction responses during testing. Validation of the list in terms of learning space factors and effect on performance, with special focus on "learned helplessness" and other patterns which interfere with new learning and performance, is the ultimate goal.

5. Refinement of a checklist designed to separate "correct knowledge" from error content in students' test responses. This knowledge is classified by cultural themes, and seems to show interests and activities in which the student has some involvement. Validation of this list, also, in terms of learning space factors and student performance is sought. A second purpose is to assess the extent of a student's exposure to the dominant culture reflected in standardized tests, and to give separate weights to "correct content" in comparison to "error content" in the analysis of what is being transmitted through cultural channels within the family.

6. Establishment of a way to outline a) the structure of role relations and b) the "mosaic" of cultural themes brought out in the finished case studies in our files. Some combinations of these elements seem to form syndromes for which, hopefully, remedial prescriptions can one day be formalized. Meanwhile, the step taken this year provides for a clear outline of case findings which can then be tested as the objective checklists decribed above are refined and validated.

In all six of the foregoing studies, some pertinent findings were made this year, though only the refinement of the model for classifying fathers' occupations was completed. Work on the remaining tasks is on-going. First, a search was made of the literature on our background variables to find models for predicting the effects of social roles on cognitive styles. The general conclusion found for all the background role-relationship variables was that genetic factors, processes of direct imitation and reinforcement, and selective learning based on value orientation developed by the child, all impress themselves in the development of the child. The model required for assessment of learning space factors and their effects is, therefore, complex, and only a holistic assessment which allows for interactions among these role-relations will suffice.

Some reclassification of fathers' occupations was done on the basis of the preliminary study of the relation of Scholastic Aptitude Test scores to fathers' occupations in a population of successful students. It was found that the seven major subgroups into which Technology occupations were divided were quite uniformly related to the development of SAT mathematics skills, with sons strongly favored; also SAT verbal aptitudes were higher for daughters in three of the seven subgroups, but even lower than SAT mathematics aptitudes in the remaining four. Thus, as in previous studies, Technology occupations of fathers, overall, seemed related to strong sex-typing factors which adversely affect cognitive development in girls. The only other difference among subgroups of Technology occupations was in the general level of abstract functioning which each one fostered. In applying the classification of occupations to the work that followed, the Technology group was now divided into Sex-type I and II. Some other divisions were also made which removed Technology cases to other occupational groups entirely.

The population of students referred for psychological services numbered 1841 cases. The four background variables used to classify them resulted in a 360-cell matrix (2 sex, 6 ethnic, 3 ordinal place, 10 occupational groups). As single-parent and bi-racial homes, fathers in changing occupations, and major shifts in ordinal place could not be classified in this matrix without vastly increasing the number of cells, separate matrices were made for these ambiguous variables. These matrices are a basis for study of "broken homes" for which an adequate model was not found; the complex variables they reflect are also worthy of study in their own right.

The research population occupied only 39 percent of the 360 cells. Boys outnumbered girls two to one, and spread through 47 percent of their cells while girls occupied only 26 percent of theirs. Middle children outnumbered others, as expected, but were distributed through about the same number of potential cells. Over half the students were of North European background, 26 percent were Hispanic, and 11 percent Black. "Other whites" (North European and Mediterranean) and Blacks were over-represented in relation to the District population, while Hispanics were under-represented, as were students of Oriental background. The cases with North European background spread over 85 percent of their possible cells, the Hispanics 68 percent, Blacks 32 percent, and Oriental-Americans 20 percent. The most populous cell (Middle N. European boy with Technology Sex-type I father) had 79 cases, while 204 cells had no cases at all. The empty cells were mainly for girls and ethnic and occupational groups with small N's in the total population.

Some interactions among backgrond variables were found. The sex of the student seems to have had less bearing on reasons for referral in bi-racial cases than those from single-parent or one-race homes, if the father's occupation was stable; but the proportion of boys increased from 60 to 82 percent for occupationally unstable homes. An interaction with sex was indicated for ordinal place in that there were disproportionate numbers of oldest girls and youngest boys in the population, while the proportions for each sex differed little for middle children. For middle children there was an interaction with stability of the father's ocupation so that the proportion of middle children increased markedly if the father was unemployed or disabled. The effect of unstable occupations was greatest for middle Hispanic and Black sons, and for middle children of both sexes in bi-racial homes. With ten occupational categories involved, the cases were spread too thinly over most cells for comparison. However, oldest daughters seemed to cluster under the most verbal, people-oriented occupations, suggesting sex-typing conflicts when fathers are very "verbal," while on the other hand, the proportion of daughters referred for problems under those Technology occupations which seem to support verbalism in girls was very low. South European cases seemed clearly to cluster under Business categories, but the small N's are not reliable. In 1980-81 a search of additional records is planned in order to fill in missing data on approximately one-third of all cases, and to update the case list so that the cell location for these cases, too, can be determined.

Over the years, "Other whites" (N. European and Mediterranean background) have accounted for about 50 percent of all referrals, but in the interval for 1961 through 1965, evaluations for the program for the "educable mentally retarded" caught up disproportionate numbers of Hispanic students. Later, their proportion dropped from 79 to 26 percent as this program was scaled down. Other changes over the years seem to reflect the changing ethnic composition of the district as a whole, except for a disproportionate increase in youngest children which seems over and above the effect of decreasing family size.

The work on Item 4 on our list, the "personal interaction inventory", progressed during the project year through the steps of collecting and classifying all personal interaction responses in a sample of 100 test protocols. These responses seemed to range along a continuum from "least control" over task, situation, tester and self to "greatest control." At the "least control" end were undifferentiated, poorly focused reactions which tended to draw the tester in to help in some way, and resembled descriptions of "learned helplessness" in the literature. An intermediate stage where the student seems to separate self from the total situation and draw on his or her own resources in an ego-centric way was identified. At the "most control" end, four types of skilled responses were found; these were techniques for 1) making an integrated response (the ideal adaptive response), 2) avoiding the situation, 3) "turning off" self or the tester, or 4) deserting the task and interacting with the tester instead. The result of this work is a researchable model for further study of those types of personal interaction variables which interfere with task performance.

The first steps in creating an appropriate checklist and scoring manual for these variables were also completed, but an attempt at factor analysis showed that the 148 variables involved had been too finely partitioned to yield meaningful results. Such fine partitioning had been done in order to remove subjective elements as completely as possible. We will now work back from the correlation matrices. These show limited numbers of variables with very extensive positive and negative correlations. Such variables suggest a structure for grouping other minor variables so that the high degree of multi-colinearity that was found can be eliminated, allowing the analysis to proceed. The work on this highly important checklist is continuing.

A format for the "correct knowledge inventory", Item 5 on our list, was refined and scoring instructions were set up. By the end of the project year, all cases for whom we have WISC or WAIS protocols and sentence completions, through the class of 1978, had been scored, checks showing adequate inter-rater reliability were done, and a pilot study of the "correct knowledge" profiles of limited numbers of cases in ten learning space cells had been done. Since the scoring of all cases had not been finished, and only WISC protocols were used, the cell N's ranged only from seven to 12 cases. Seven of the cells were for students of North European background, and two were Hispanic. Four were for girls; two were for youngest boys and one for oldest girls while the rest were for middle children. Four were for Technology occupations of fathers and six were occupationally unstable.

In none of the cells did the average student score higher than 56 percent correct; the lowest score was 39 percent for Middle Hispanic girls with father's occupation changing. All cells were disproportionately low on Humanities and Science/Technology categories, with none above 44 percent. On the other hand, most had average scores above 80 percent for categories of Human Attributes and Food/Health. Overall, the checklist seemed to distinguish between cells as to total score, interpreted as differences in level of abstract functioning. The highest scores were for North European oldest and middle boys and girls in the Technology group, and for oldest girls from this ethnic group with father's occupation changing. The average scores for each category in each cell were then multiplied by an index number based on the average level of abstractness for that cell in order to make direct comparisons of profiles possible. Profile variations which suggested interest in verbal-social areas were found for sons with Technology Sex-type II fathers, but not Sex-type I, while daughters of Sex-type II fathers had the highest average indexed score for knowledge of Sports/Outdoor/Calendar information, suggesting once more that a real difference in the effects of these two Technology occupation clusters would be found in more reliable studies. For the two Hispanic cells, the indexed average for boys was ahead of all others in Science/Technology information, while the profile for the middle Hispanic girls was the most unlike others of any cell. Their Science/Technology score was close to zero, while the highest areas were Animals, Human Attributes and Human Actions, and Clothes. This study too is continuing, with many cases yet to be scored. The comparison of cell profiles will then proceed wherever N's are large enough, and other types of analyses for the purposes previously described will be done.

Finally, for Item 6 on our list, outlines for a sample of completed case studies were finished. These suggested re-occurring patterns of role-structure, cultural themes and student performance which seemed inter-related and might be considered as syndromes. Material abstracted from four examples of repeating configurations was laid out to show such relationships in table form. Conflicts between themes were also indicated, along with treatments to resolve them. The four syndromes identified in this way were: "Masculinized/Aggressive Girl," "Helpless/Handicapped Boy," "Authoritarian/Aggressive Boy," and "Mothering/Passive Girl." It is to be emphasized that, while the finished case studies from which these syndromes were derived had relied on very close comformity to the case data that had been assembled, rather than any theoretical model, the syndromes described remain in the realm of clinical studies pending validation by more objective means. Work is continuing on a "cultural theme" checklist and a more extensive skill inventory than our checklist for personal interaction skills. The correlates for these instruments will eventually shed light on the inter-relations which appear to create such syndromes. Hopefully, we will then see an end to the sad situation where, through failure to understand cultural influences, a student with a full range of potential capabilities is forever locked within the limited modalities which his or her particular subcultural milieu may allow.

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Appendix A

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INTRODUCTION

Rationale:

Responsible assessment practice requires the psychologist to seek "most probable" explanations for learning disabilities. Given the enormous learning capacity of the human species, it is important, therefore, to screen for cultural interferences with learning before any diagnosis is complete. This step requires a holistic approach that cuts across a range of situations, and a model that reflects learning processes. Such a model has not heretofore been designed.

Since adaptive learning occurs minute-by-minute throughout life, the diagnostic model must, first, recognize that a human response is an integrative process that draws together skills from various sources to make an optimum response for the situation as the person perceives it. Second, the criteria for most things we do vary as environment and cultures vary so that optimums themselves are situational. Third, the number of possible brain connections appears almost infinite, and thus, what happens in the brain may vary widely, even when two people make the same observable response. But the assessment models we have inherited from physical science and medicine do not reflect such complexity.

Moreover, the physical science model requires a finished criterion which can be analyzed for its components; but the things people do that can be analyzed in this way are relatively few (basic skills, job tests, etc.); and our assumptions about the cause of an error have probably a less than even chance of being right. Similarly, the medical model of central tendencies, or "normal" functioning, postulates homeostatic states and physiological limits which are identified by laboratory tests. Such norms depict the ranges within which the vital biological processes must remain; but in psychology, there is no "true" score that cannot change within the individual, or drift within the group that is used for "norming." The limits of learning may be as much in the impact on a person's environment as in bodily processes. Moreover, norms are performance expectancies for group members, but the absence of performance in a group member tells nothing about that member except that he or she did not perform. As in the criterion model, a high score tells that an optimum, situationally-oriented integration of processes took place; but a low score says nothing about the internal process, no matter what psychological test is given. The closest thing to an autopsy in psychology is the longitudinal case study.

A model for examining cultural effects requires, first, a case study. Poor school functioning can be looked at as either an absence of something, or as too much of something else. In screening for cultural effects, the latter possibility must be considered. If we allow that observed behavior, even in the physically handicapped, is, to some degree, learned knowledge or skill which has been useful in come context or it would not have been learned, we can see most problem behavior, not as an absence of something, or as something "bad," but as a skill for something, recognizing that the primary mode of human learning seems to be imitation. This optimistic approach to assessment places family patterns in a positive light, gives maximum credit for intelligent adaptation by individuals, and results in an assessment that focuses on learning variables which, by their very nature, are susceptible to change through educational processes.

Without making assumptions about internal functions, assessment of cultural factors requires description of processes in observable form; e.g., listening, repeating, abstracting, copying, etc.. The question of motivation requires a construct, however. In this model, it is postulated that the human being must "belong" to survive childhood, and that there is a universal desire to be competent in what one values.

Not only skills, but cultural content must also be recognized. This is the stuff of tastes and values. It is affected by imitation, conditioning and selective perception, so that we can observe learning sets. Who knows for sure how a given cue will be reacted to by an adolescent who has stored 14 years of minute-by-minute experience? We have expectancies, but therein lies a source of bias in the assessment process. To avoid this bias, the model requires a Q-sort technique which allows material to cluster as it will.

Finally, there is feeling. In a model where motivation is believed to be a drive for competence and belonging, feeling becomes less of a cause of problems than a by-product of other processes. In practice, it seems almost impossible to distinguish between a physiological feeling state in an adolescent and an imitative response that works, albeit unconsciously, in some way. A study of behavior patterns displayed in the child's family may be the key.

Returning now to the question of cultural interferences with learning, this research grew out of observations made during testing which indicated that some skills seem incompatable with others. This led to identification of styles in the form of negatively correlated pairs of variables. A follow-up of the occurrence of differential verbal/mathematics aptitude patterns demonstrated that five major social roles (i.e., sex, ordinal place, father's occupation, marital status of parents, and ethnic status) made separate cumulative contributions to these patterns. We now believe that there are "cleavages" in what people learn where there is mutual inhibition of one type of process by another; and that "division of labor", and social roles themselves, will one day be defined in these terms.

But how can one classify all that people can do? This task seemed insurmountable, and yet it is essential for a fair assessment model to encompasss this entire universe. We have found that, for skills, a simple model based on two major polar dimensions is enough. These dimensions, which have been identified over and over, are, first, the Internal-abstract/External-reality dimension, which could also be called the "IQ" or social class dimension; and second, an Open-ended exploration/Controlled operation dimension. The first dimension has been incorporated in Jensen's model of Level I/Level II Intelligence (Jensen,1975) and Witkin's Field Dependence/Independence model (Ramirez, Castenada 1974); while the second is described most extensively by Freud (1959) and Cattell (1965), and can be dealt with, also, in terms of Verbal/ Mathematics style and Divergent/Convergent thinking processes. When these two dimensions are placed orthogonally, they provide a broad classification system, the poles of which are antagonistic, while "complex" behavior can be defined in terms of sequencing and integration of processes.

The aptitude-treatment interaction concept seems to be describing the effects of antagonistic processes pressed on children in school classrooms. So what is a school problem? Some 1500 studies of students referred as learning disabled or emotionally disturbed seem to show us, when the data are arranged in terms of role and style variables, that it is nearly always either (1) a misapplication of an "over-learned" alternative skill that is incompatable with the desired learning, and, or (2) a projection of outside role-relations onto teachers and classroom situations, lifted from original contexts where they constituted the optimal adaptive responses the child could achieve. In other words, the cultural aspect of a learning disability would be an effect of projection of vitally important perceptual sets and survival patterns that work best in some deeply conditioning outside environment that bears some kind of identity with the situation where the problems occur in school. Tragically, in our experience, the greater the youth's motivation to succeed, the more intense the projection seems to be, and the greater the misapplication of "skills."

Though remedies are outside the scope of this project, it can be said that, since cultural patterns are learned, remediation requires a learning model. In general, the model must provide: 1) discrimination of contexts (children can and do learn separate sets of linguistic and behavioral responses when they recognize differences in situations); 2) definition of a youth's personal goals, values, and priorities so that earlier learning can be sorted out by talk and milieu counseling in terms of appropriateness, and goal-related alternative models can be observed and imitated; and 3) specific help in the inhibition of habits which are transferred due to familiar cues in new settings, but which interfere with goals in that setting, while new learning is established. Inhibition can be done by arrangements in the setting which prevent an inappropriate response, by teaching the child to ignore the cue, or by providing an alternative. However, the survival response the child brings should be respected and supplemented. It is unlikely that it would ever be "unlearned" and, in the end, it must be integrated in some intelligent way with new patterns acquired in school.

Background of the Problem:

Our model is designed to provide, for teachers of students with problems, the specific information on learning needs that mainstreaming requires. The end goal is to describe, in working detail, the effects of cultural background learning transmitted within the individual student's "learning space" and to show how this learning enhances or impairs school functioning. After assessment, placement goals are to fill developmental deficits in mental and social intraction skills (or to teach what coping skills we can to the permanently handicapped) by helping them to increase their repertoires as they adapt to lessons, rather than adapting lessons to fit underdeveloped, circumscribed repertoires.

The purpose will be to screen for cultural bias in the diagnostic process for those students with problems, both in and out of the Special Education program. Many of these students have been in remedial programs and are still referred for problems in high school. However, though previous misdiagnoses may be suspected in such cases, our aim is not a follow-up study, but to improve diagnosis. It should also be noted that the treatment that follows will differ radically if there is an assumption of internal pathology, as compared to a demonstration of maladaptive transfer of learned cultural patterns. The first treatment will be directed at some inferred physiological imbalance (medical treatment); while the second will recognize the legitimacy of patterns by which the student survives in whatever social setting he or she must cope with outside of school, and work directly for discrimination between school and out-of-school contexts. The second type requires help no less than the first, for it is essential to inhibit that which is interfering without stigmatizing the family background; it also requires participation of the adolescent him or herself in forming clearly defined ideas of the kind of person he or she hopes to be, and then providing actual learning opportunities to make pro-social aspirations a reality.

Among our case histories are many where cultural maladaptation appears to have been misdiagnosed as defective functioning. However, this is not to deny that there are primary pathological conditions which Special Education serves. In the area of mental functioning, there are genetic abberations, palsies, aphasias, autism, and over-susceptibility to stimulation. There are, as well, youths with permanent emotional damage from battering or deprivation, and such extreme states as schizophrenia. However, these children also need an assessment of cultural factors which affect their growth for they, too, live and learn in cultural milieus the general effects of which are not well known, and each must cope with role-relations that affect cognitive development, social interactions skills and self-concept. The cultural transmission processes do not differ, though what they learn may. An assessment of these factors needs to be a part of every treatment plan.

The basic strategy we have used in developing this model has been unselective verbatim recording of test responses; collation of records to bring salient events in health and family histories, school observations and psychological services together in a single collation; and Q-sorts of projective material and test response content. From successive samples of 75 to 100 cases at a time we have catalogued the materials in checklists. These are long, cumbersome, and in much need of refinement. Moreover, they include many items which are unique, or very rare. While these unusual items are of great help with individual cases, it is important also to recognize "syndromes" wich tend to reoccur, and to know when a maladaptive school response is, in fact, an intelligent response to some unrecognized set of environmental pressures. Only then can the adult "ride with" the student's own priorities and motivations in ways that open the door to development.

Review of the Literature:

A limited search of the literature was made for models predictive of effects of social roles on cognitive styles. Previous work by Belz (1971) showed independent, cumulative effects of five roles on bivariate SAT scores. The roles were: sex, ordinal place, father's occupation, one versus two-parent homes, and ethnic status. All but one-/two-parent homes were looked at separately in the literature, with uneven results. While the number of studies is vast, they have not generally been organized in terms of predictive models. Rather, there seem to be a large number of interactions of many kinds among them.

Sex: Most work has been on the independent influence of sex differences on roles and role-perceptions themselves. Maccoby and Jacklin (1974) reviewed the literature up to 1974. Research continues to show higher spatial ability, and hence, mathematical ability in males (McDaniel, 1976), but this is also disputed on grounds that mathematics background and general ability were not adequately controlled. Fennema (1977), for example, found that, with better control, there were no differences in mathematics achievement, and that spatial/visual sex-related differences were small and score distributions overlapped considerably. She also noted that social class affected attitude toward the appropriateness of success in mathematics for the two sexes. Maccoby and Jacklin also reported that cultures had more effect than sex, from population to population, on the development and magnitude of mathematical ability, language ability, competitive attitudes and nurturant behavior. They also found that where females were more confined, their visual-perceptual abilities were poor, but where both sexes have early independence, they both have good visual-spatial abilities.

Maccoby and Jacklin pointed out that most work they found had been done on white middle-class American citizens, and that there was a lack of information about fathers and working class families in relation to socialization of the two sexes. Moreover, early opportunities to learn, as well as affective aspects of the child's milieu do have an impact on the developmental course of abilities. Restak (1979) cites work on brain differences from birth resulting in enhanced hearing in girls, a lower threshold for touch identification, and earlier response to faces, as well as linguistic proficiency. Boys were said to show superiority at total body coordination, 3-dimensional space perception, and early visual superiority. The conclusion of Maccoby and Jacklin provides a suitable hypothesis for this project, namely: It is suggested that (1) genetic factors, (2) "shaping" by direct reinforcement of simple imitation of boy-like and girl-like behavior of parents and other socializing agents, and (3) a child's own spontaneous recognition of behaviors "appropriate" for his or her sex as a sex-concept organized from information distilled from a wide variety of sources, each exert their own direct influence and interact with each other in sex-typing.

Ordinal Place: Ordinal place, especially between oldest girls and youngest boys, was related to significant differences in SAT mathematics scores, (Belz 1971). The difference in verbal development in favor of oldest children was thought due to more direct contact with adults, as mature users of language, and more opportunity to delegate physical tasks to younger children. Schachter (1959) demonstrated that oldest children were more apt to affiliate with other people when faced with anxiety-arousing situations, while later-born children were more apt to seek solitude, suggesting that the later-born practice more direct, non-verbal manipulation of the physical world as they work out problems alone.

Nuttall, Nuttall, Polit and Hunter (1976) demonstrated that family constellation variables are significantly associated with academic achievement even when family size and IQ levels are controlled, but the results are sex-specific; i.e., first-born girls receive higher grades if IQ or family size is controlled, but not if both are, suggesting that, even in large families, they are more likely to develop patterns of work habits and responsiblity which help them academically. Boys from small families received higher grades, however, suggesting less responsiblity in larger families. Wolberg and Marjoribanks (1976) reviewed educational research on family environment and concluded that data on birth-order and number of siblings; father's years of education, occupation and occupational level; socioeconomic status; measures of differential development of specific abilities in verbal reasoning, numeration, and spatial ability; as well as other factors should be considered in experimental and correlational studies of educational effects.

Hypotheses on the effects of ordinal place have to do with access to, and feedback from, mature speakers and thinkers. Opportunity to practice directing those younger also seems to be a factor. These circumstances should favor development of symbolic skills and social dominance in the oldest child. In fact, our case data, as well as the findings of many others, show about two out of every three students who are at "gifted" levels on IQ tests to be oldest children. In contrast, we expect younger children to be more apt to react to words as directives for physical action, to have better word recognition than comprehension, and to excell in performance areas.

Father's Occupation: Still the most comprehensive model we have found for relating fathers' occupations to cognitive styles and personal values is Roe's (1959) classification of occupations into eight major groups. These groups were found to have differential effects on bivariate SAT scores in the Belz (1971) data, with verbalism a stronger determinant than mathematics. Additional studies of effects on cognitive functions were done by Wolberg and Marjoribanks (1976). It appears that there are consistent style, interest and value patterns at both low and high levels within an occupational group. Levels correlate with level of education and socio-economic status across all groups.

Belz (1971) aligned occupational groups and her other role variables according to bivariate SAT score styles (V+M-, V-M+), and classified cases according to the number of determinants for each style. She found that the discrepancy in favor of a V-M+ or a V+M- style increased with the number of congruent role determinants. She concluded that many cases of school problems thought to stem from internal pathology were, instead, a reflection of lop-sided distributions of mutually reinforcing cultural determinants for one cognitive style or the other. This conclusion provides a hypothesis for the present work.

With an increase in working mothers, their occupations will undoubtedly become a less ambiguous factor than Roe found them to be, but this variable was not included in the present study. Belz also hypothesized that in any family where the father is successfully employed, especially at more abstract "career" levels, the mental and social skills related to his work would be strongly reinforced, not only by outside social and economic factors, but also by respect and reinforcement from the mother; in such homes, cognitive skills related to vocational-typing would take precedence over those related to sex-typing pressures. On the other hand, at the blue-collar "job" level, and also if the father were chronically unemployed, sex-typing would be stronger. She found that sex-typed V/M style discrepancies were, indeed, greater at low SAT score levels. Maccoby and Jacklin (1974) also found a tendency for a cross-over of sex-stereotypes among intellectually superior children. Again, very complex interactions are shown.

One versus Two-parent Families (Broken/Intact Home): This role variable is probably more susceptible to complex interactions than the others. It was dropped from the background role matrix in the present study for this reason, and to keep the number of case cells within bounds. Belz (1971) found that youths tended toward a V+M- style if there was no man in the home, and vice versa, with the M+ effect increasing even more if only the father was present. However, this did not seem to hold for all ethnic groups, and wartime data on father-absent homes showed no lack of sex-typed self-concepts in boys. Though there are a great many studies in this area, Dr. Eleanor Maccoby, in a personal communication, pointed out the need for a researchable model to deal with the broken home variable.

A frequent case study finding which relates to school functioning has been that, in an unstable home, one child or another is apt to move into a parent relationship on a par with the other parent if the same-sex parent is out or incapacitated. It will then be difficult to maintain the youth in a student role in school, and rebellion or withdrawal is common if the youth is forced back into a child role at home. A generalized inhibition of, and even resistance to, achievement striving has also been noted if the same-sex parent is down-graded for any of several reasons, or if the child's place in the home is made insecure by creation of a "second family" of younger half-sibs. It is not clear how far these observations can be generalized, but rather, there appear to be "syndromes" which could be described in later phases of this work.

Ethnic Status: Lesser (1965) demonstrated differential cognitive profiles for preschoolers in major ethnic groups in New York City, which, like Roe's vocational groups, cut across social class levels. Similar profiles were demonstrated on high school achievement tests and the SAT for Oriental, Hispanic, and Black students in the Belz studies (1965, 1971). There also seemed to be differences in sex-related cognitive profiles, especially for boys, in different ethnic groups in her work, though Maccoby and Jacklin did not address this variable. Again there are vast numbers of studies, but except for IQ studies aimed at finding "true" intelligence measures, or demonstrating bias in these tests, and Jensen's (1975) heritable trait model, we found only one other model of cognitive functions for an ethnic group. This is the work of Ramirez and Castenada (1974) on "field-dependence" and "field-independence" as they relate to Hispanic culture.

The Ramirez and Castenada findings are in line with findings by Bruner (1966) that rural and city children in Mexico, and city children in Boston all showed relatively similar discrimination skills, but that they diverged with age so that while both groups of city children developed more abstract skills, the rural children in Mexico remained more concrete in their responses. However, even though they did well at abstract levels, the Mexican city children continued to make fine discriminations and carry a large load of vivid associations, while the Boston children were more apt to use general principles relating to value, uses, or other simplifying "operational" concepts. Ramirez and Castenada concluded that American education emphasizes and reinforces field-independence over field-dependence, as compatible with the demands of Western Industrial society, while Mexican-American children characteristically show field-dependent behavior due to a combination of socialization practices. This style is often interpreted as "lack of motivation, fear of failure, or low intelligence,"in school situations, they say. They advocate a "culturally democratic" educational environment where the individual "has a right, legal and moral, to remain identified with his own ethnic group, values, language, home and community, while learning and accepting mainstream values." They advocate new policies to develop bi-cultural identity, the ability to function competently in two cultures, and bi-cognitive development of distinctly different "field-dependent and field-independent" styles. They point out that any socio-cultural system has distinct sub-cultures which produce specific styles for communication, human relationships, learning and motivation; and they suggest that ethnicity, or differences in cultural values, may be more important than social class in determining individual style.

We note that a smaller percentage of Asian students is referred for problems, and they they are over-represented in the high-IQ population, but aside from old studies of questionable validity, no comprehensive studies of Asian patterns were found. However, we contacted the Asian-American Bilingual Center in Berkeley, California, and were advised that such work is forthcoming. The staff of our own Indian Education program describes severe motivational problems among its students and poor school success in many, but no comprehensive model of cognitive functioning was found, and there was particular emphasis on maintaining tribal differences.

In general, it seems clear that ethnicity, as a variable, adds linguistic color and culturally relevant content to an individual's makeup, but similar family configurations cut across all ethnic groups, producing structurally similar syndromes and mini-cultures. From her classification of ethnic categories on the V/M style dimension, Belz (1971) noted a very general geographical factor which seemed to place all more northerly peoples on the V-M+ side, while Mediterranean, African and southern Asians were, on the average, more apt to show V+M- profiles, particularly in males. Hispanic Americans showed more balanced patterns but at a relatively low level of abstractness. The hypothesis derived from their work on sex-typing by Maccoby and Jacklin (1974), namely that genetic factors, socialization by others, and spontaneous organization of a wide variety of learnings into behaviors that fit a personal sex-concept seems appropriate for the effects of ethnicity also. Once again, only holistic assessment of interactions among background roles will suffice.

Outline of the Present Project:

The work done on the model for assessing learning disabilities in terms of cultural background under Grant No. 43-69427-80-3293-7100 from the California State Department of Education in 1979-80 addressed only some facets of the holistic process. In addition to the search of the literature for models, which is described in the introduction, five separate studies are described, each in a section of its own. These are: 1) preliminary improvement of the Roe model for classifying occupations, 2) description of the population of students referred in our district for school problems, 3) the patterning of "correct" IQ test responses, 4) a model for assessing personal interaction factors in individual test situations, and 5) a model for classifying final case study content and recommended treatments.

SECTION I

CLASSIFICATION OF FATHERS' OCCUPATIONS FOR FURTHER STUDY

Before taking up research on relations between background roles and school problems, some ambiguities in classification of fathers' occupations were addressed. Expecting that working class backgrounds will be found for an even larger proportion of cases referred for school problems than the 54% found in our college-oriented population in previous studies (Belz, 1971), we broke the large Technology Group up for more detailed study. The validity of the resulting set of empirically determined categories was then tested. Certain occupations which seemed to cut across more than one of Roe's main groups (Table 7, Appendix A) were also isolated for separate study. It also appeared that an interaction with sex-typing effects might account for the peculiar spread of Technology Group cases on the SAT V x M plane (Figure 2, Appendix A), so this, too, was tested.

Subjects: Data were collected on a sample of 641 East Side Union High School District seniors in the classes of 1971 through 1974 whose fathers were in Technology occupations.

Method: Scholastic Achievement Test (SAT) and Preliminary Scholastic Achievement Test (PSAT) scores for the Verbal and Mathematics sections were recorded. PSAT scores were converted to the same metric as those for the SAT to allow for analysis of all subjects at once. Conversion formulas are shown in Appendix A.

Data were also collected on students' fathers' occupations. All cases falling in Roe's Technology Group were used. These cases were then divided into seven occupational categories. Nine individual occupations, e.g., "company representative", which seemed to belong outside the Technology Group were also identified. Both sets of occupations were then analyzed to see if: 1) the seven Technology categories differed significantly among themselves; and 2) if the nine ambiguous occupations were comparable to the remaining Technology cases, or had been misclassified.

Four types of analyses of the distributions were made for each set. These were: 1) discriminant analyses for separations among categories along SAT Verbal and Mathematical dimensions; 2) canonical discrimiant analyses for differences in the scatter of bi-variate scores; 3) analysis of variance; and 4) multi-variate analysis of mean differences. Means for the categories and single occupations were also plotted visually, by sex, to look at clustering on the SAT V x M plane. The findings from this preliminary study are summarized here; complete details will be found in Appendix A.

RESULTS:

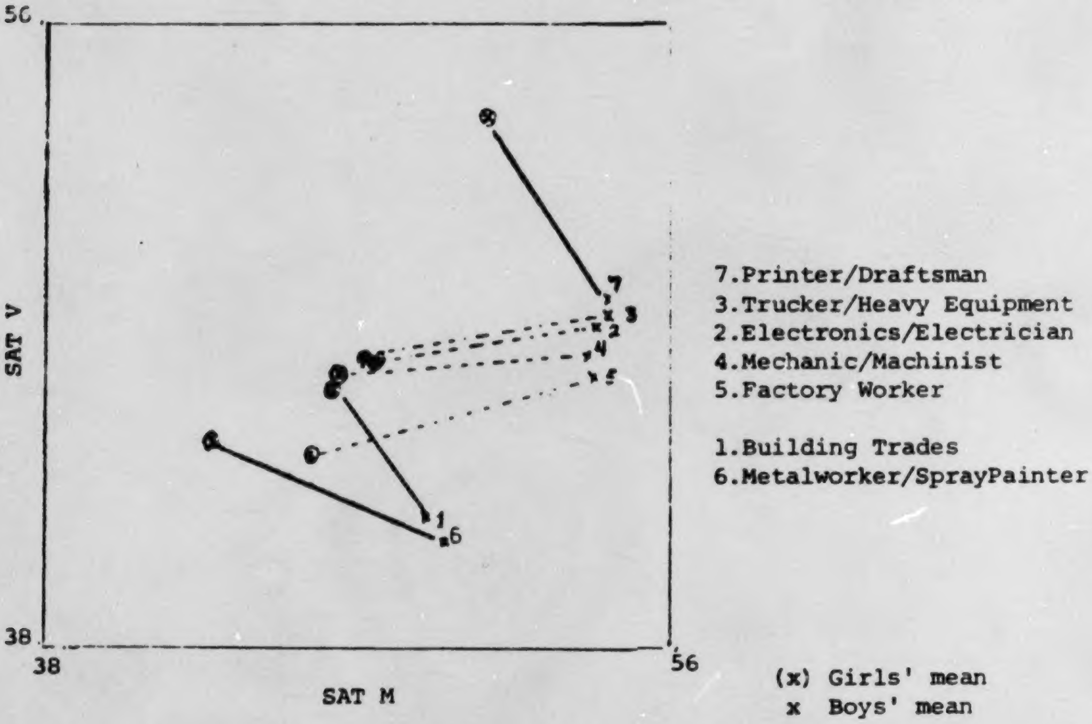
Technology Categories: The discriminant analysis showed that fathers' occupations in the different Technology categories varied significantly in their effect on SAT Verbal scores for both sons and daughters, but not on SAT Mathematics scores nor on the SAT V and M scores in combination. This meant that all the Technology categories (e.g., building trades, electronics worker) were fairly uniformly related to the growth of skills reflected in SAT M, but not so for SAT V. Analysis of variance and category means showed that nearly all occupational categories gave much more support for SAT M aptitudes in the sons than in the daughters, and that SAT V aptitudes were also higher for sons in four of the seven job categories.

These results suggested that the Technology Group should be divided into two clusters of occupations. Consequently, two clusters were tentatively identified from the discriminant analysis, though there was considerable overlap. A second, slightly different, division was made on the basis of mean scores which differentiated the three job categories where the average SAT V score was higher for daughters than some from those where it was lower. These were labelled Technology Sex-type I and II. Both ways of dividing the categories remained tentative pending analysis of the nine special occupations which had seemed misclassified, involving 200 cases.

Special Occupations: It was found that the effects of these occupations were not uniform, either. Among them, both SAT V and M made significant discriminations for daughters, with the SAT V factor stronger. There were also some differences among their effects on sons when SAT V and M factors were combined. The SAT V means for the occupations also differed widely for daughters, and in one case the SAT M mean for girls equalled that for boys (Decorators). A comparison of these results with the mean Verbal-Mathematics profiles for Roe's other occupational groups in the original study (Belz, 1971) showed similarities which led to reclassification of some of the occupations under other group headings (e.g., "technical writiers" were classified in the General Culture Group). The final model for classifying fathers' occupations for the present study is shown in Figure 2.

Conclusions: Since removal of these 92 cases changed the makeup of the Technology population that remained, no general statement about the differential effects of fathers' Technology occupations on the growth of abstract verbal and mathematical skills in offspring could be made until a new analysis of the seven categories was made. The results are shown in Figure 1.

Figure 1. Location of Bivariate Means for Fathers' Occupational Categories on the SAT V x M Plane, by Sex of the Student



By and large, the effect of removing misclassified cases was to sharpen the previous findings; i.e., sons were uniformly higher than daughters on SAT M, to a significant degree, while daughters were higher than sons on SAT V in three of the seven categories (Figure 1). This finding agrees with the follow-up study finding reported in Appendix A (Belz, 1965), namely, that daughters of skilled blue-collar workers made the poorest grades of any of the high school groups studied.

On the other hand, the sex-typing effect found here was not strong enough to cause any of the categories to cluster in significantly different areas of the SAT V x M plane in the discriminant analyses. Those small differences in location of centroids that were found seemed to relate only to differences in levels of occupations; level is a social class factor distinct from the verbal-mathematics skill profile, which is a style factor. As a result, the tentative division of the Technology Group on the basis of the scattering of scores on the SAT V x M plane was dropped. However, the finding that, while all of the Technology categories seemed to favor mathematical aptitudes in sons more than daughters, some of them supported higher verbal development in daughters, while others seemed to inhibit it, clearly related to the goal of diagnosing reasons for school problems, so the division into sex-typed clusters was retained.

It should be noted, further, that the present project depends on extrapolations from earlier studies of SAT scores in college-oriented students to the present, quite different, population. This is justified as follows: As the SAT is a test of abstract mental skills, higher SAT scores reflect gains in abstractness. In contrast, the previous work (Belz, 1971) showed that the more skilled a student was at clerical work, which requires attention to external forms rather than internal abstract structuring, the lower the SAT score was apt to be. But even at low levels on the SAT, stable "differential" Verbal-Mathematics styles still existed in about the same proportions of students as at higher levels. It is expected, therefore, that those background variables known to affect styles at abstract levels will also produce stylistic differences at the less abstract levels of functioning that are more typical for students referred for "learning disability."

Figure 2. Two way classification of occupations by groups and levels adopted for the present project. (Note: This table was adapted from the book *The Psychology of Occupations*, by Anne Roe, Copyrighted by John Wiley & Sons, Inc. 1956 ; with permission of the publishers for the work done by Dr. Belz in 1971 and is now revised from that work.)

Roe Code	I	II	III	IV	V	VI	VII	VIII
Project Code	2	3	8	730/740	9	6	4	1
Occupational Level	Service	Business Contact	Organi- zation	Technology	Outdoor	Science (life)	General Culture	Arts & Entertainment
1	Personal therapist Social workers Supervisors Counselors	Promoters	U.S. President and cabinet Industrial tycoons Chiefs of staff	Inventive geniuses Consulting or chief engineer Ships' Commander	Consulting specialists	Research scientists University & college faculty Medical specialist	Supreme Court Justices University & college faculty Prophets Scholar, Pastor	Creative artists Great performers Teachers. unvier-sity equivalent Museum curators
2	Piolots Social workers Probation, truent (trained)	Promoters	Military officer Brokers Union officials Certified Account-ants. Executives	Applied Scientist Factory manager Engineers Ships' officer	Applied Scien-tist. Landowners, Large operators Landscape Arechitects	Scientists, semi-independent Nurses, Pharmacist, Veterinary Math, science teacher	Editors, Chemist Teachers, high school, element. Geologists Factory scientist	Athletes, Music arrangers Designers, Art critics
3	YMCA officials Welfare workers City inspectors	Salesmen, auto, bond, insurance etc. Dealers, Confid-ence man	Accountants Managers, own business Self-employed Storekeeper Company Manager Company Repres. Project specialist Grocery store mgr. Proprieters Traffic manager Computer opperator Logistics analysis Computer/data proc. Naval academy Methods analyst	Radio operator Flight engineer Computer Tech. Computer/elec's sales, roofer Train conductor Spray painter Aviators Painter Metal work/ spray painter Building trade Factory worker	County agents Farmers, Forest ranger, Game wardens	Technicians: medical, X-ray Museum Weather observer Chiropractor	Justice of the Peace. Radio announcer Reporters Tool designers	Ad writers Designers Interior decorator Showmen
4	Butcher, Chef Bartender, Nurse Telephone operator Barbers	Auctioneer Buyer (DOT 1) Poll taker House canvasser	Meter reader Grocery clerk Quality control Dispatcher, clerk Cashier; credit, freight etc. Foreman, warehouse Salesclerk	Blacksmith, Electronic/electric Electrician Foreman(DOT 1) Mechanic(average) Heavy equip. oper. Machinist	Lab worker Miners Oil driller	Tech. assist.	Law clerks	Advertising artist Decorators, house window etc. Photographer Race car driver
5	Baggage Clerk Garbage man, mover, janitor/ indoor maintain. Taxi driver waiter, police guards, non-coms City firemen Gen. house worker	Peddler Recruiter	Clerks; file, stock, etc. Notary, Runner Typist, Keypunch Gas attendant	Bulldozer Electronic assembly Smelter, Truckdriver	Gardener Tenant farmer Teamster Cowpuncher Swimming pool service Miner's help Outdoor maint.	Morgue att. Vet. att.	Student	Illustrator; greeting cards Show cards Writer, house painter Carpet layer Upolsterey/ drapery worker Cleaners
6	Food packer Food fact. worker Chambermaid Hospital attendants Elevator opper.	Messengers	Helpers Const. labor Wrappers Yardman Factory labor	Dairy hand Farm labor Lumberjack hod carrier	Laborer	Nontechnical helpers in scientific orginization		

SECTION II

DESCRIPTION OF THE POPULATION

METHOD:

Subjects: The subjects were all cases referred for evaluation of school problems from the case files of the Psychological Services of the East Side Union High School District, in San Jose, California. A total of 1841 subjects were identified. Based on previous demonstrations that at least five major family role-relations are involved in transmission of specific skill patterns and cultural themes, the basic model for classifying cases was derived from permutations of four of these role-relations: 1) sex, 2) ordinal place, 3) ethnic status, and 4) fathers' occupation. The case data were placed on locater cards using whatever information on background variables was available. Copies were made of original case studies for a special project file, with names to be replaced by project numbers. Use of raw test data, however, still requires reference to original protocols and adequate copies of many cannot be made; however, checklists derived from them are recorded by case number.

The permutations of the four background variables create a basic matrix of 360 cells, in which each cell is presumed to describe a culturally different "learning space" for the growing child. Though we planned, originally, to use a stratified sample, the numbers of cases in cells varied widely, and techniques to deal with entire populations are available, so it was decided to include all cases where possible.

Coding of Background Data: Each part of the coding process presented its own set of classification problems and helped to set limits for the present study, and also to define areas which must be reviewed for further investigation. First, the matrix assumes only "clear" cases where there are two parents in the home, both of the same race, and there has been no change in the father's occupational group while the student was growing up. The sex variable is straightforward, with only the male/female permutation, but the rest are clouded because many students referred for school problems come from bi-racial, single parent, and vocationally unstable homes.

To deal with such ambiguous cases, a system of double coding was used. Figure 3 shows the format for cases with "double status", and the restrictions on questions that can be dealt with under this format. For example, the format had to provide for a single-parent home as a special type of case, or allow for unemployment of the father which may have occurred early or late in the child's history. On the other hand, there are limits on the extent to which the coding can indicate such things as the order of events, or which parent was of which race, if one is to avoid creating an unmanageable number of cells.

The basic categories for ethnic status were: North Asiatic, North European, Hispanic, South Asiatic (including Pacific islands south of Japan), South European (including Portuguese, Mediterranean and Middle Eastern areas) and Black. Since surnames were sometimes used to determine race where little other data could be found, some overlap in ethnic categories is suspected. It is expected that some cases classed as North European are Jewish (Mediterranean), Black or Native American; and that some cases classed as Hispanic are Portuguese, Italian (Mediterranean) or Filipino (South Asian). Since an extensive overlap between Hispanic and Native American names exists in our area, they were classed together. Where referrals resulted in more complete case histories, few such errors would have occurred.

Figure 3. FORMAT FOR CODING PROJECT CASES

Sex	
M	1
F	2

Ethnic	
North Asian	01
	11
	12
	13
	14
	15
	16
North European	02
	22
	23
	24
	25
	26
Hispanic	03
	33
	34
	35
	36
South Asian	04
	44
	45
	46
South European	05
	55
	56
Black	06
	66

Ordinal Place	
1st/only	11
	12
	13
Middle	22
	23
Youngest	33

Fathers' Occupation		
999999	No Father/deceased/not at home	
001001	Unemployed	
100001		
100100	Arts/Entertainment	
100200		
100300		
100400		
100600		
100730		
100740		
100800		
100900		
200001		
200200	Personal Service	
200300		
200400		
200600		
200730		
200740		
200800		
200900		
300001		
300300	Business Contact	
300400		
300600		
300730		
300740		
300800		
300900		
400001		
400400	General Culture	
400600		
400730		
400740		
400800		
400900		
600001		
600600	Science	
600730		
600740		
600800		
600900		
730001		
730730	Technology Sex-Type I:	
730740		Electronic/Electric
730800		Mechanic/Machinist
730900		Trucker/Heavy Equipt.
740001		Factory worker
740740	Technology Sex-Type II:	
740800		Building trades
740900		Metal work/Spray Ptr.
800001		Printer/Draftsman
800800	Business/Gov't Org.	
800900		
900-01		
900900	Outdoor	

Double numbers:

Ordinal Place allows for change of status

Ethnic allows for bi-racial marriage. "0" shows single parent family.

Fathers' occupation, like ordinal place, allows for change of status. This may be due to job change or a broken home.

You cannot indicate the order of changes or relate ethnic status to the sex of the parent.

However, 001 (unemployed) and 999 (father out of home), or three spaces blank (no information), do indicate order of change. They are placed first or second to indicate whether these events occurred early or late.

Two digits were employed to indicate ethnicity of parents. A double number (e.g., 33) indicates a single-race home, while other combinations show a bi-racial home, but not necessarily a change over time. Where the father was unknown or out of the home before the child was two, had not been replaced, and had had no contact with the child, the first digit in the case code was replaced with "0" (e.g., 03). These were considered "single-parent" cases. If there were multiple father surrogates which known ethnic status, the race most prominent in the record was chosen to represent ethnic status. The ethnic code does not indicate broken homes, nor does the order (e.g., 23) show which parent was of which race.

Two digits were also provided to allow for a change in ordinal status. The basic categories were Oldest or Only, Middle and Youngest Child. A double number signifies no change in status (e.g., 33). Two different numbers show a change, but not the order in which the two ordinal positions occurred. Thus, as with ethnic status, the lower digit was always placed first regardless of the chronology of events.

There were ten categories of fathers' occupations. These were derived from the eight groups defined in Roe's two-way classification (Roe, 1956). As described on pages 9 to 11, this model, which had been adapted for previous studies (Belz, 1971) was further refined for the needs of the current study. That is, the Technology Group was divided when it was found that some occupational categories within it seemed to enhance verbalism in daughters while others did not. The basic categories following this revision were thus: 1) Art/Entertainment, 2) Personal Service, 3) Business Contact, 4) General Culture, 5) Science, 6) Technology Sex-type I, 7) Technology Sex-type II, 8) Business/Government Organization, 9) Outdoor, and 10) Permanantly Unemployed.

Three digits were needed to accommodate the basic occupational groups, as distinct from the sub-groups (e.g., Science 400, Technology Sex-type I 730); unemployment was indicated by "001" while occupational groups went from "100" through "900". A double number (e.g, 200200) showed a single-occupation family, but not necessarily one father. Other combinations (e.g., 200300) show a changed occupation with either the same, or a different, father; only occupational instability is indicated, not necessarily a divorce. Nor does the order signify which occupation came first.

The coding did allow for chronology of events where there was loss of a father, a substantial period of unemployment, or no information about one of two fathers. Loss of the father was shown by "999", "001" showed unemployment, and a blank showed no information. These 3-column codes were placed first or second, depending on chronology. E.g., "999---" indicated abandoment, decease of the father, or shifting father surrogates of short duration, up to the age of six or seven (data are often imprecise); while "---999" showed the same events after the age of six or seven. "001" and 3-digit blanks were used in the same way.

Psychologists' Decisions: A second type of problem lay in the need to use the psychologist's judgement to decide some classificaitons. For example, sometimes there were more than two occupations or more than two "fathers." There were also borderline cases wher fathers were disabled, or retired, and both the occupational and the "999" classification could be applied. Moreover, jobs, themselves, were not always easily classified as some were loosely labelled, or they cut across group lines (e.g., there is need for a study of the effects of shifts to "self-employed," "manager" or "owner" status). It was decided to choose the status of longest duration, where this was known. It was also decided to group shifts to a higher level within an on-going activity under the original category (e.g., plumbing) instead of reclassifying the father as a "manager," for example. This choice assumed proficiency in the trade itself, without addressing possible effects of an administrative or executive role on the aptitudes of offspring.

In sum, this code enables the user to: 1) determine sex effects, 2) separate stable from unstable ordinal place effects, 3) separate single-race from bi-racial and single-parent homes, 4) identify nine employment categories and two sub-categories, 5) separate stable from unstable employment effects, and 6) separate fatherless homes from those with fathers, indicating whether losses or major period of unemployment occurred early or late.

With this coding one cannot: 1) determine shifts in racial composition of the home, 2) determine which parent was of which race in a bi-racial home, 3) distinguish the cronology of changes in ordinal place or occupational status of the father, except to show when there was no contact with the father or when he was unemployed, 4) recognize more than two fathers or kinds of occupations, of 5) recognize a change of fathers when the occupation does not change. Separate studies of case lists would be needed to investigate the effects of these complex variables.

Breakdown of the Sample: A total of 1841 subjects were thus identified and included in the study. They were classified according to sex, ordinal place, ethnicity, father's occupation and year of the student's birth. Three subsamples emerged. Since all but the sex variable had been double-coded to allow for changes in family composition, "clear" cases (those where the first and second code number on each variable were the same) could be separated from cases where one or more variables were "ambiguous" due to changes. For the basic matrix of four variables, 723 "clear" cases were identified.

Those cases where the first digit for ordinal place, ethnicity, or father's occupation did not match the second one were classed as "ambiguous" or "unstable." This group included all cases where there had been major family changes, or bi-racial homes. An example might be a case where the father was a janitor while the step-father was a businessman, and birth of a half-sibling changed the child's status from youngest to middle around the age of ten. Both occupations and ordinal places would be accounted for in the coding, and instability in the child's "learning space" would be indicated. There were 424 cases in this group.

A third set of cases included those where one or more data points were missing. These cases were reserved for studies of single variable (e.g., the sex of the student was known in 1825 of the 1841 cases, while the data for all four variables were complete for only 1297 cases).

Matrices: There were 360 cells in the four-variable matrix for "clear" cases (2 sex x 3 ordinal x 6 ethnic statuses x 10 occupational groups). These 360 cells make up Matrix I.

Additional matrices were set up for separate study of cases where the background was not clear. These were:

Matrix II was for "single-parent" or "No Father" cases. These cases included those with no father and those where multiple foster fathers or "friends of the mother" were indicated. Though race or occupation of the father may be known, what distinguishes these cases is the lack of a clearly defined father figure living in the home at any time. A small number of cases where the father's occupation was not known were also included in this matrix because the occupational variable was not used. Thus, a No Father Matrix case might be described as "oldest Hispanic boy with no father," while a "clear" case might be an "oldest Hispanic boy with Personal Service father." There were 36 cells in this matrix (sex x ordinal place x ethnic).

Matrix III was of "Occupations Changing" cases. It included instances where the father's occupation changed from one group to another, or where the father was unemployed or absent due to death or marital problems for an extended period, while a father was present and working at another time. The "Unemployed" category occurs in both the "clear" and the "unstable" matrices; in the first case, the father was permanently unemployed, while in the second, a change occurred. It should be noted that "Unemployed" included disabled or imprisoned fathers as well as those out of work. All occupational statuses are simply classified as "Changing"in this matrix. Thus, there are 36 cells only (sex x ordinal place x ethnic).

Matrix IV was for "Bi-racial" cases. These were cases where parents were of two races, but ordinal place and father's occupation remained constant. This matrix had 60 cells (sex x ordinal place x occupational group).

Finally, there were some more complex cases where two, or all three of the variables other than sex were not constant. These were listed for further study as they come from very unstable homes. The distribution of these cases is shown in Table 1.

Table 1. Distribution of Cases with more than one double-coded variable.

Variables	N
Ordinal Place and Occupation Changing	16
Biracial with Ordinal Place Changing	4
Biracial with Occupation Changing	33
Biracial with Ordinal and Occupation Changing	2
Single Parent with Ordinal Place Changing	1

There were also 12 cases where only ordinal place changed. As noted, changing ordinal place did not reflect birth of full siblings early in the student's life, but only the kinds of changes which occurred after the student's ordinal place was well established; e.g., a sibling born much later, a sibling death, or the introduction of step- or half-sibs into the home. Except for a very small number of deaths, changes in ordinal place accompanied changes in parents, but in the 12 cases referred to here, fathers' occupational category did not change. The number of such cases is too small to make up a matrix.

Missing Data: Of the 1841 case records in the study, 544 had missing data. Except for 14 cases with missing occupational data in the "No Father" matrix, no cases with missing data were included in the matrices. However, these cases were included in tallies for individual variables. The resulting totals for each single variable are shown in Table 2.

Table 2. Distribution of 1841 Cases in the Total Research Population by Background Variable

Variable	Category	N	%	Data Missing or Double Coded N
Sex:	Male	1214	67	
	Female	611	33	
	Total	1825	100	16
Ordinal Place:	Oldest Only Child	411	28	
	Middle Child	728	50	
	Youngest Child	324	22	
	Total	1463	100	378
Ethnic Status:	North Asian	12	1	
	N. European	651	57	
	Hispanic	296	26	
	South Asian	9	1	
	S. European	48	4	
	Black	131	11	
	Total	1147	100	694
Father's Occupation:	Art/Entertainment	53	4	
	Personal Service	296	24	
	Business Contact	75	6	
	General Culture	46	4	
	Science	17	1	
	Technology Sex-Type 1	361	30	
	Technology Sex-Type 2	186	15	
	Business/Government	93	8	
	Outdoor	81	7	
	Chronically Unemployed	13	1	
	Total	1221		620

RESULTS:

The numbers and percents of cases in each of the demographic categories in each of the four matrices is shown in Table 3. The number and percent of cells, or "learning spaces", in each of the four matrices is also shown. It can be seen that the numbers varied widely, and that "Fathers' Occupation Changing" (Matrix III) was the only one where more than half the cells were filled. The cells available for each variable are also shown, along with the number and percent filled. It can be seen that 85 percent of possible cells for North European students were occupied, and that 50 percent of cells, or more, were occupied for Hispanic students, and for some occupations (Personal Service,

TABLE 3.

Numbers and Percents for Demographic Categories in Four Matrices

Variable Category	MATRIX I "Clear" Cases N	%	II "No Father" (Includes 14 Cases with Missing Occupation Data) N	%	III Father's Occupation Changing N	%	IV Biracial Cases N	%	Number and Percent of cells Occupied N	%
Sex:										
Male	485	67	41	69	293	69	21	60	84/180	47
Female	242	33	18	31	131	31	14	40	47/180	26
Ordinal Place:										
Oldest/Only Child	219	30	14	24	94	22	18	51	47/120	39
Middle Child	342	47	25	42	240	57	13	37	55/120	46
Youngest Child	166	23	20	34	90	21	4	11	48/120	40
Ethnic:										
North Asiatic	8	1	0	0	4	1	Biracial		7/60	12
North European	436	60	24	40	215	51			51/60	85
Hispanic	180	25	18	30	119	28			41/60	68
South Asiatic	6	1	0	0	3	1			5/60	8
South European	29	4	0	0	19	4			19/60	32
Black	68	9	18	30	64	15			27/60	45
Father's Occupation:										
Art/Entertainment	24	3	No Occupation		Father's Occupation Changing		2	6	11/36	31
Personal Service	125	17					5	14	23/36	64
Business Contact	41	6					3	9	18/36	50
General Culture	26	4					2	6	11/36	31
Science	12	2					1	3	8/36	22
Technology I	237	33					11	31	17/36	47
Technology II	122	17					6	17	20/36	56
Business/Government Organization	75	10					2	6	20/36	56
Outdoor	56	8					3	9	20/36	56
Permanently Unemployed	5	1					0	0	4/36	11
TOTAL CASES	723		59		424		35		1241	
CELLS FILLED	156/360	39	17/36	47	29/36	81	23/60	38	156/360	39

Business Contact, Technology II, Business/Government Organization, Outdoor); while 26 percent, or less, of the cells for girls, Asiatic students, Science occupations (mainly life and medical sciences), and Permanently Unemployed fathers were occupied.

Matrix I: In more detail, the "clear" cases filled only 156 (39%) of 360 possible cells, while 240 remained empty. Notably empty were cells for girls, youngest children, Asiatics, South Europeans, and some occupations. Over half the cases were North European, and 51 percent of fathers were in Technological occupations. The number of cases per cell in the matrix is shown in Table 1, Appendix B. To some extent, empty cells were a function of small N's for some categories in the total population. For example, since there were 10 occupational categories, an N of less than 10 in any other category meant that all occupational categories could not be filled. The areas of the "Clear" Matrix with less than 10 cases are shown in Table 4.

Table 4. Areas in the "Clear" Matrix with less than 10 Cases

Oldest North Asian Boy	3	Oldest North Asian Girl	0
Oldest South Asian Boy	0	Oldest South Asian Girl	1
Oldest South European Boy	1	Oldest South European Girl	9
Middle North Asian Boy	1	Oldest Black Girl	2
Middle South Asian Boy	1	Middle North Asian Girl	0
Middle South European Boy	4	Middle South Asian Girl	1
Youngest North Asian Boy	2	Middle South European Girl	2
Youngest South Asian Boy	3	Youngest North Asian Girl	2
Youngest South European Boy	9	Youngest South Asian Girl	0
		Youngest South European Girl	1
		Youngest Black Girl	3

It can be seen that the areas with less than 10 cases include those of all Asians and South Europeans, for both boys and girls, and the areas for the oldest and youngest Black girls. Four areas had no cases at all. The remaining unfilled cells in the Matrix were due to low N's in some fathers' occupations. The areas covered by the 240 empty cells in the Clear Matrix also remained empty in the other three matrices.

Matrix II: The No Father Matrix had 59 cases for 36 cells. This total included 14 cases with missing occupational data, as noted. The numbers of cases in each category are shown in Table 3, and the N's for each cell are shown in Table 2, Appendix B.

Matrix III: The distribution of the 424 "Occupational Unstable" cases in Matrix III is also shown in Table 3, and the N's for each cell are shown in Table 3, Appendix B. Of the 36 cells in this matrix, 81 percent were filled. The difference between this figure and the 39 percent filled for the Clear Matrix indicates the degree to which cell vacancies reflected small N's for some occupational groups, notably Science, Art/Entertainment, General Culture (mainly professions other than medical), and Permanently Unemployed fathers. Since all occupational groups are lumped together under "Occupation Changing," the number of possible cells drops from 360 to 36, and most are filled.

Matrix IV: The distribution of bi-racial cases is shown in Table 3, and the N's for individual cells are shown in Table 4, in Appendix B. This matrix had the largest proportion of empty cells (62%) as there were fewer cases to spread about (N = 35), and there were 60 cells.

Differences in Proportions:

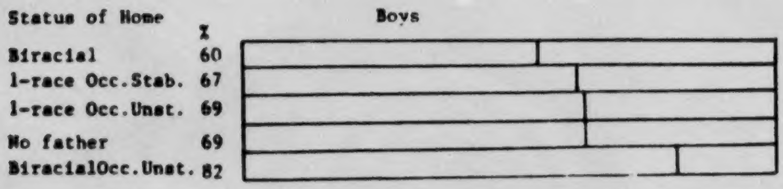
The proportions of students per category for each variable were compared from matrix to matrix. Some generalizations about combinations of background variables that seemed to underlie disproportionate numbers of cases could be made, as follows.

Sex Differences: Table 2 on page showed that, overall, twice as many boys as girls had been referred for school problems. The proportions of boys and girls in the various matrices are shown in Table 5. The smallest proportion of boys was found in the bi-racial sample when fathers' occupation was stable. The proportion increased to the population average of 67 percent on the "Clear" cases (single-race, occupation stable). There was a slight increase to 69 percent where the father's occupation was changing, and where there was no father at all. The highest proportion of boys was for bi-racial cases where the father's occupation was changing. While some of these differences may reflect only small N's in some matrices, it may also be that factors for instability cumulate for boys so that their proportion increases with each additional factor, while the opposite was true for girls. Apparently the sex of the student had less bearing on the reasons for referral of bi-racial students than others.

Table 5. Relation of Sex of the Student to Other Variables

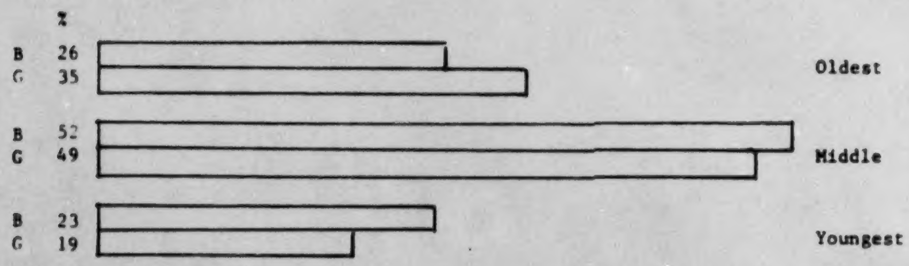
Other	Male		Female	
Variables	N	%	N	%
Clear Cases (Father's Occupation Stable)	484	67	239	33
Father's Occupation Changing	293	69	131	31
No Fathers	41	69	18	31
Biracial (Father's Occupation Stable)	21	60	14	40
Biracial (Father's Occupation Changing)	27	82	6	18

Figure 4. Proportions of Boys Referred for School Problems According to Five Types of Home Backgrounds



Ordinal Place: Breakdown, by sex, into ordinal place showed a possible interaction between these two variables; i.e., the proportion of oldest girls referred was larger than the proportion of oldest boys, while there was a larger proportion of youngest boys than youngest girls. This pattern was evident in all conditions except that of the bi-racial home with father's occupation stable. There, the reverse was true, but the N was also small. The figures are shown in Table 6 on the next page. Figure 5 shows that about half the students in the project were middle children. The number of oldest children is slightly larger than youngest, as might be expected since "only" children were included with "oldest."

Figure 5. Proportions of Oldest or Only, Middle and Youngest Children



The consistency of the enlarged proportions of oldest girls and youngest boys across all but the bi-racial matrix, whether fathers' occupation was stable or not, indicates that, for the population as a whole, some factor other than stability of the home was implicated in referral. In contrast, the sex of the student was not a factor in the proportions of middle children. Except in the Bi-racial and No Father matrices, the proportions of middle boys and middle girls were fairly equal.

On the other hand, middle children were apparently affected by an interaction between ordinal place and stability of fathers' occupations. Table 7 shows a decrease in proportions of oldest children of both sexes as instability of the fathers' occupations increased, while there was an increase in proportions of middle children which was slightly greater for boys than girls. However, increasing instability was not a factor in referrals of youngest boys or girls.

Table 7 shows that the proportion of middle children of both sexes went from 47 percent in the occupationally stable "Clear" cases to 56 and 57 percent in the single-race cases with fathers' occupation changing; and to 63 percent for middle boys, at least, in cases where there was a working father who was temporarily unemployed or disabled. Table 8 on page shows an even greater effect for bi-racial middle children. Here the proportion of middle children in bi-racial homes with occupation stable was 37 percent for both sexes, while the figure jumped to 66 and 67 percent for middle bi-racial children with fathers' occupations changing.

A further breakdown of ordinal place categories into ethnic groups, by sexes, showed that, while proportions of North European boys to girls remained fairly equal in both stable and unstable occupational background, the proportion of middle boys increased for Hispanic and Black populations when fathers' occupational status was unstable, while the proportions of girls decreased. These effects are shown in Table 9 and Figure 6.

Table 6. Proportions of Oldest or Only, Middle and Youngest Children in each Matrix, by Sex.

Other Variables	Sex of Student	Oldest N	Oldest %	Middle N	Middle %	Youngest N	Youngest %	TOTAL
Clear Cases (Father's Occupation Stable)	Boys	136	28	229	47	110	25	484
	Girls	82	35	111	47	46	19	239
Father's Occupation Changing	Boys	58	20	167	57	63	23	293
	Girls	36	27	73	56	22	17	131
No Father	Boys	9	22	16	39	16	39	41
	Girls	5	28	9	50	4	22	18
Biracial (Father's Occupation Stable)	Boys	11	52	9	43	1	5	21
	Girls	7	50	4	29	3	21	14
Biracial (Father's Occupation Changing)	Boys	4	15	18	67	5	19	27
	Girls	1	17	4	66	1	17	6
TOTALS	Boys	218	26	439	52	195	23	852
	Girls	131	32	201	49	76	19	408

Table 7. Relation of Ordinal Place to Stability of Fathers' Occupations, by Sex, in Single-race Homes

Category	"Clear" Occupation Stable		Occupation Changing (includes cases in Column 3)		Working Fathers unemployed, disabled or left home part of the time	
	N	%	N	%	N	%
Oldest/Only Boy	136	28	58	20	18	13
Middle Boy	229	47	167	57	88	63
Youngest Boy	110	25	68	23	34	24
Oldest/Only Girl	82	35	36	27	15	21
Middle Girl	111	47	73	56	41	59
Youngest Girl	46	19	22	17	14	20
Male	485	67	293	69		
Female	242	33	131	31		

Table 8. Relation of Ordinal Place to Stability of Fathers' Occupations, by Sex, in Bi-racial Homes

Variable	Category	Occupational Stable in Biracial Home		Occupational Changing in Biracial Home	
		N	%	N	%
Ordinal Place	Oldest/Only Boy	11	52	4	15
	Middle Boy	9	43	18	67
	Youngest Boy	1	5	5	19
	Oldest/Only Girl	7	50	1	17
	Middle Girl	4	29	4	66
	Youngest Girl	3	21	1	17
Sex	Males	21	60	27	82
	Females	14	40	6	18

Figure 6. Proportions of Oldest or Only, Middle, and Youngest Children, by Sex and Ethnic Group, from Stable and Unstable Occupational Backgrounds.

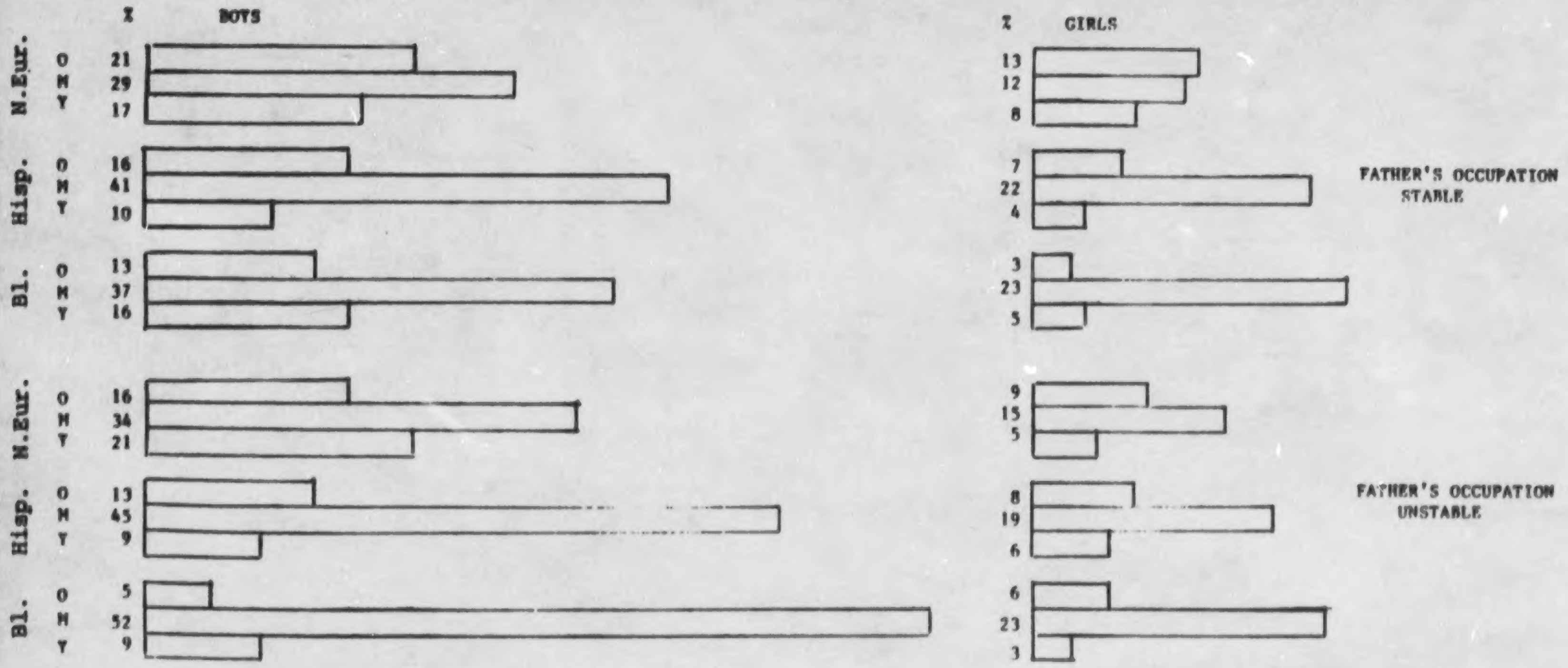


Table 9. Relation of Ordinal Place to Ethnicity, by Sex, for Occupationally Stable and Unstable Homes. (Row percentages)

Variables	Sex of Student	Ordinal Place	NAs N	NAs %	NEur N	NEur %	Hisp N	Hisp %	SAs N	SAs %	SEur N	SEur %	Bl N	Bl %	TOTAL
Clear Cases Father's Occupation Stable	Boys	Oldest	3	37	92	21	28	16	0		4	14	9	13	136
		Middle	1	13	125	29	73	41	1	17	4	14	25	37	229
		Youngest	2	25	76	17	18	10	3	50	9	31	11	16	110
	Girls	Oldest	0		58	13	12	7	1	17	9	31	2	3	82
		Middle	0		52	12	39	22	1	17	2	7	17	25	111
		Youngest	2	25	33	8	7	4	0		1	3	3	4	46
	Boys Total		6	75	293	67	119	67	4	67	17	59	45	67	484
	Girls Total		2	25	143	33	58	33	2	33	12	41	22	33	239
Father's Occupation Changing	Boys	Oldest	0		34	16	15	13	0		5	26	4	5	58
		Middle	1	25	74	34	53	45	1	33	5	26	33	52	167
		Youngest	1	25	45	21	11	9	0		5	26	6	9	68
	Girls	Oldest	0		19	9	10	8	1	33	2	11	4	6	38
		Middle	0		32	15	23	19	1	33	2	11	15	23	73
		Youngest	2	50	11	5	7	6	0		0		2	3	22
	Boys Total		2	50	153	71	79	66	1	33	15	79	43	67	293
	Girls Total		2	50	62	29	40	34	2	67	4	21	21	33	131
No Father	Boys	Oldest	0		5	56	2	22	0		0		2	22	9
		Middle	0		6	38	5	31	0		0		5	31	16
		Youngest	0		6	38	3	19	0		0		7	44	16
	Girls	Oldest	0		1	20	2	40	0		0		2	40	5
		Middle	0		4	44	3	33	0		0		2	22	9
		Youngest	0		2	50	2	50	0		0		0		4
	Boys Total		0		17	41	10	24	0		0		14	34	41
	Girls Total		0		7	39	7	39	0		0		4	22	18
Total Father's Occupation Stable			8	1	436	60	177	24	6	1	29	4	67	9	723
Total Father's Occupation Changing			4	1	215	51	119	28	3	1	19	4	64	15	424
Total No Father			0		24	41	17	29	0		0		18	31	59

Though N's for South European and Asiatic Groups are too small to judge, there is some indication that ordinal place patterns for students referred from those groups are quite unlike those for North Europeans, Hispanics and Blacks.

Ethnic Status: Table 10 shows that, over all the matrices, 65 percent of oldest children and 70 percent of youngest children were North European in background, while only 48 percent of middle children were from that group. The larger proportions of middle children in the Hispanic, Black and South Asian groups may be merely a reflection of family size, but we have no data on this variable.

Table 10. Distribution of Sex and Ordinal Place Categories, by Ethnic Group

Variables	Sex of Student	Ordinal Place	NAs N	NAs %	NEur N	NEur %	Hisp N	Hisp %	SAs N	SAs %	SEur N	SEur %	Bl N	Bl %	TOTAL
Sex	Boys		8	1	463	57	208	25	5	1	32	4	102	12	818
	Girls		4	1	212	55	105	27	4	1	16	4	47	12	388
Ordinal Place		Oldest	3	1	209	65	69	21	2	1	20	6	79	6	322
		Middle	2	1	293	48	196	32	4	1	13	2	97	16	605
		Youngest	6	2	173	70	48	19	3	1	15	6	29	12	247
All Ethnic			12	1	651	57	296	26	9	1	48	4	131	11	1147

Table 14 on Page 30 compared the number of students referred for Psychological Services to the ethnic composition of the District as a whole over the years of this study. It should be noted that the classifications used by the District are somewhat different from those used in this project, and where overlap in the project is suspected due to dependence on surnames, the ethnic groups have been combined. Despite these discrepancies, fairly clear base rates in the District population can be derived for comparison with project data.

To summarize other ethnic relationships, as brought out in previous paragraphs, complex interactions of ordinal place with sex and occupational stability of the father differed among ethnic groups, suggesting differences in the roles children assume when the father's occupational role is unstable. I.e., referrals for school problems seemed to involve oldest sons and daughters in cases of North European background where fathers' occupation was stable, while mainly oldest sons of Hispanic or Black background were found. Unstable occupational backgrounds, on the other hand, impacted on middle sons and daughters of North European background, but again, mainly on sons, while daughters decreased, among Hispanic and Black cases. For Asians and South European cases, N's are too small for definitive statements.

Father's Occupation: Table 11 shows some differences in the relations of sex to particular occupations of fathers. The proportion of boys referred was higher than average (70%) for the Art/Entertainment and Technology Sex-type II Groups; while it was lower for Business Contact and Business/Government Organization Groups. Except for the Permanently Unemployed, where the N was very small, the remaining groups were near the population average of two boys for every girl referred. These figures are for the "Clear" cases.

Table 11. Distribution of the Sexes, by Father's Occupation

Occupational Group	Boys		Girls		Total
	N	%	N	%	N
Arts/Entertainment	17	70	7	30	24
Personal Service	82	65	43	35	125
Business Contact	25	60	16	40	41
General Culture	17	65	8	35	26
Science	8	67	4	33	12
Technology (sex-type I)	160	67	77	33	237
Technology (sex-type II)	88	72	34	27	122
Business/Government Org.	45	60	30	40	75
Outdoor	38	67	18	33	56
Permanently Unemployed	4	80	1	20	5

The occupations in these tables are arranged in a sequence which runs from esthetic and people-oriented (Arts/Entertainment, Personal Services) to organized and thing-oriented activities (Business/Government Organization, Outdoor). Table 12 shows some fairly systematic interactions between this sequence and ordinal places for the two sexes. Oldest boys were fairly evenly distributed except for those categories with very small N's and a smaller than average proportion with fathers in Outdoor work. Oldest girls, however, had higher than average proportions at the people-oriented end of the sequence (Arts/Entertainment, Personal Services, Business Contact, General Culture), while there were none in Science and the proportion in Technology Sex-type II was small.

Table 12. Relation of Ordinal Place of the Student to Fathers' Occupation, by Sex.

	Boy's Ordinal Place							Girl's Ordinal Place							
Father's Occupation	Oldest		Middle		Youngest		Boys' Total	Oldest		Middle		Youngest		Girls' Total	TOTAL
	N	%	N	%	N	%		N	%	N	%	N	%		N
Arts/Entertainment	5	29	11	65	1	6	17	4	57	2	29	1	14	7	24
Personal Service	26	32	38	46	18	22	82	17	40	19	44	7	16	43	125
Business Contact	7	28	7	28	11	44	25	7	44	5	31	4	25	16	41
General Culture	7	41	5	29	5	29	17	6	75	1	13	1	13	8	26
Science	4	50	2	25	2	25	8	0	0	2	50	2	50	4	12
Technolgy (sex-type I)	45	28	74	46	41	26	160	25	32	34	44	18	23	77	237
Technology(sex-type II)	21	24	47	53	20	23	88	6	18	20	59	8	24	34	122
Business/Government Org.	14	31	18	40	13	29	45	11	37	17	57	2	7	30	75
Outdoor	6	16	25	66	7	18	38	6	33	9	50	3	17	18	56
Permanently Unemployed	1	25	2	50	1	25	4	0	0	1	100	0	0	1	5
TOTALS	136	28	229	47	119	25	484	82	34	111	46	46	19	239	723

The distribution of middle boys was quite like that for middle girls. That is, the proportions of middle boys in Business Contact (salesman) and Science and General Culture (professional areas) was below average, and for middle girls, the low proportions were also in Business Contact and General Culture areas. The larger proportions for middle boys were in Arts/Entertainment, Technology Sex-type II and Outdoor areas, while for middle girls they were in Technology Sextype II and Business/Government Organization. For youngest boys, the proportion for Business Contact occupations was high, while that for Outdoor work was low. No pattern was noted for youngest girls, however.

Fathers' occupational categories were also broken down by ethnic status and ordinal place. Table 13 shows that, except for the small Southern European group, which was markedly oriented toward both business categories (Business Contact, Business/Government Organization) the largest proportions of cases for each ethnic group were found in the two Technology subgroups. Table 5 in Appendix B shows cell frequencies for Matrices I and II, rearranged according to Fathers' Occupation; while Table 6 in Appendix B gives a complete breakdown of occupational categories by all variables (sex, ordinal place, ethnic status).

Table 13. Relation of Ethnic Status of the Student to Fathers' Occupation, by Ordinal Place.

Father's Occupation	Ordinal Place	Ethnic Group											
		N.Asian		N.Europ		Hispanic		S.Asian		S.Europ		Black	
		N	%	N	%	N	%	N	%	N	%	N	%
Arts/Entertainment	Oldest	0	0	6	33	1	33	1	100	0	0	1	50
	Middle	0	0	10	56	2	67	0	0	0	0	1	50
	Youngest	0	0	2	11	0	0	0	0	0	0	0	0
Personal Service	Oldest	1	33	23	40	8	23	0	0	5	83	6	29
	Middle	0	0	20	34	24	69	0	0	1	17	12	57
	Youngest	2	67	15	26	3	9	2	100	0	0	3	14
Business Contact	Oldest	0	0	9	36	2	33	0	0	3	50	0	0
	Middle	0	0	8	32	2	33	0	0	1	17	1	33
	Youngest	1	100	8	32	2	33	0	0	2	33	2	67
General Culture	Oldest	1	100	11	52	0	0	0	0	1	100	0	0
	Middle	0	0	5	24	1	50	0	0	0	0	1	100
	Youngest	0	0	5	24	1	50	0	0	0	0	0	0
Science	Oldest	0	0	3	38	0	0	0	0	0	0	1	50
	Middle	0	0	1	13	1	100	0	0	1	100	1	50
	Youngest	0	0	4	50	0	0	0	0	0	0	0	0
Technology (sex-type I)	Oldest	0	0	57	34	11	26	0	0	0	0	2	8
	Middle	0	0	67	40	25	60	0	0	1	50	15	63
	Youngest	0	0	45	28	6	14	0	0	1	50	7	29
Technology (sex-type II)	Oldest	0	0	19	26	8	20	0	0	0	0	0	0
	Middle	1	100	36	50	25	63	0	0	0	0	5	83
	Youngest	0	0	17	23	7	18	0	0	3	100	1	17
Business/Government Org.	Oldest	1	100	18	35	3	30	1	50	2	29	0	0
	Middle	0	0	22	43	6	60	1	50	2	29	4	100
	Youngest	0	0	11	21	1	10	0	0	3	43	0	0
Outdoor	Oldest	0	0	4	29	6	18	0	0	1	50	1	33
	Middle	0	0	8	57	23	68	1	50	0	0	2	67
	Youngest	1	100	2	14	5	15	1	50	1	50	0	0
Permantently Unemployed	Oldest	0	0	0	0	1	25	0	0	0	0	0	0
	Middle	0	0	0	0	3	75	0	0	0	0	0	0
	Youngest	0	0	0	0	0	0	0	0	0	0	1	100
TOTALS	Oldest	3	38	150	34	40	23	1	17	13	45	11	16
	Middle	1	13	177	41	112	62	2	33	6	21	42	63
	Youngest	4	50	109	25	25	15	3	50	10	35	14	21

DISCUSSION:

In addition to the fact that there were twice as many boys as girls in this population of students referred for school problems, it is clear from the case distribution that some configurations of background variables drew together higher proportions of referred cases than others. Larger numbers of middle Hispanic and Black students can probably be related to differences in average family size across ethnic groups. Overall, the preponderance of North European and Hispanic cases, and the smaller percentages for other ethnic groups, all parallel the ethnic composition of the total student population in the District, as illustrated in Table 14. Nevertheless, it can be seen that Oriental and Hispanic students are under-represented in the population of referred students, while North and South European (other white) and Black students are over-represented.

Several options for studying the population of referred students were set up in the coding of background variables. For single-variable studies, large N's are available except for some racial and occupational categories. The concept of a "learning space" combines variables for a holistic study of mental measurements, school performance and behavioral data where this is warranted. Other variables, such as occupational or education level, family size, mothers' occupations, and the like can be looked at across "learning spaces." The details of complex (double-coded) racial, ordinal place, and occupational statuses are subsumed under "bi-racial," "occupation changing," and "no father" classifications. There appear to be somewhat different configurations of background variables in the bi-racial and single-race categories, and in the "occupation stable" group as compared to "occupation unstable." These variables appear worthy of study in their own right.

Comparisons between proportions of cases in a given category (e.g., boys versus girls) across the several matrices brought out a variety of interactions among sex, ordinal place, single versus bi-racial homes, stable versus unstable occupational backgrounds of fathers, and types of fathers' occupations. A number of these patterns seem congruent with cognitive styles found in previous studies where SAT scores were the dependent variable (Belz, 1971). Excerpts and tables from that work will be found in Appendix A.

The student's sex seemed to be less of a factor in the distribution of bi-racial cases than others, where fathers' occupation was stable; but other sex differences suggest that, for boys more than girls, factors for instability cumulate so that the number of boys increased with each additional factor. A consistent interaction across all but the Bi-racial Matrix also indicated larger proportions of oldest girls and youngest boys. This interaction may reflect Belz' earlier finding that oldest girls were significantly more verbal than other students, on the average, while youngest boys tended to be "non-verbal". Oldest girls also tended to have fathers in the most people-oriented occupations. It may be that over-development of verbal skills is involved. Meanwhile the proportion was low in Technology Sex-type II cases, where verbalism in a blue-collar environment is supported. Interactions between ordinal place, sex, and fathers' occupation differed in North European cases when compared to Hispanic and Black cases. These differences suggest differences in the role children assume in different ethnic groups when the father's economic role is unstable; i.e., for North Europeans, sex of the student was not a factor, while for the other two groups, there was a marked increase in middle boys, while girls seemed less affected. The clustering of South European cases in the "business" categories, while they were under-represented in Technology, was also of interest. Their numbers were small, however, and identification of these cases, by surname usually, may be incomplete, leaving this finding in doubt.

TABLE 14.

Racial and Ethnic Survey, East Side Union High School District, San Jose, California (Racial and Ethnic Categories are Those Defined by the United States Department of Health, Education and Welfare)

Ethnic Distribution of All Students							Ethnic Distribution of Students from Mono-Racial Homes Who Were Referred for School Problems	
1969		1979		Average			1966 to 1980	
N	%	N	%	N	%	Race	N	%
7121	59	9550	47	8336	51	OTHER WHITE	699	61
580	5	2231	11	1406	9	BLACK	131	11
32	.3	265	1.3	149	1	NATIVE AMERICAN	296	26
3385	32	6547	32	5216	32	HISPANIC		
283	3.3	1869	9	1126	7	ORIENTAL	21	2
99	.8	1869	9	1126	7	FILIPINO		
				16233		TOTAL	1147	

CHANGES IN BACKGROUNDS OF REFERRED STUDENTS OVER THE YEARS

Since the population being studied were those referred for "school problems", possible changes in District policies and remedial programs for which students were tested from 1958 to 1980 were sought.

Method: To key the study to school years, year of the student's birth, rather than age at time of testing was used as the index. Differences in the composition of the populations found for each year were analyzed. Birth years ranged from 1942 to 1966, which meant that these students would have entered the 9th grade, roughly, from 1956 through 1980. Cases born from 1963 on are still currently in school, and these files are incomplete as new cases are added daily. The cut-off date was March 30, 1980. Birth years are missing for 53 cases. The numbers for each year are shown in Table 15. Since 1967, the total for each year has amounted to between one and two percent of the District population.

Table 15. Distribution of Project Cases by Year of Birth

	Year	N	Percent	Estimated 9th Grade Entry
	1942	2	0.1	1956
	1943	4	0.2	1957
	1944	4	0.2	1958
	1945	16	0.9	1959
	1946	6	0.3	1960
	1947	2	0.1	1961
	1948	2	0.1	1962
	1949	13	0.7	1963
	1950	29	1.6	1964
	1951	31	1.7	1965
	1952	57	3.2	1966
	1953	101	5.6	1967
	1954	114	6.4	1968
	1955	136	7.6	1969
	1956	164	9.2	1970
	1957	205	11.5	1971
	1958	189	10.6	1972
	1959	152	8.5	1973
	1960	143	8.0	1974
	1961	121	6.7	1975
	1962	99	5.6	1976
Current cases, files not complete	1963	103	5.8	1977
	1964	72	4.0	1978
	1965	22	1.2	1979
	1966	1	0.1	1980
TOTAL		1788	100.0	

Contingency tables were set up for birth-year crossed with each demographic variable. Because ethnicity, ordinal place, and fathers' occupations were double-coded to allow for changes in family composition, the first and second parts of these variables were examined separately. Chi-square tests were then used to determine whether the overall classification by birth-year was independent of classification on each demographic variable. If the chi-square probabilities were significant, the hypothesis that birth-year was unrelated to a particular demographic variable was rejected, and a relationship between birth-years and that variable was indicated.

RESULTS:

Table 16 shows that Ethnicity I and Ethnicity II were significantly related to birth-year (P = 0.00 for both). This result may reflect only the high proportions of North European and Hispanic students referred overall, in combination with that fact that the District population grew, and with growth, use of Psychological Services also increased.

TABLE 16

Summary of the Birth-Year Trends
Analysis, by Year

Variable	N	x^2	df	P
Sex	1781	31.52	24	0.14
Ordinal Place 1	1450	50.29	48	0.38
Ordinal Place 2	1451	44.64	48	0.61
Ethnicity 1	1660	400.79	144	0.00*
Ethnicity 2	1668	306.04	120	0.00*
Father's Occ. 1	1356	229.41	240	0.68
Father's Occ. 2	1411	237.35	240	0.36

---

*Statistically significant

Table 17 shows the results of the analysis of five-year intervals on birth dates. Only Fathers' Occupations I and II proved to be statistically independent of birth years. The other variables were significantly related to the intervals.

TABLE 17.

Summary of the Birth-Year Trends for
Five-Year Intervals

Variables	N	x^2	df	P
Sex	1825	11.81	4	0.02*
Ordinal Place 1	1462	20.98	8	0.01*
Ordinal Place 2	1463	17.84	8	0.02*
Ethnicity 1	1676	122.41	24	0.00*
Ethnicity 2	1684	114.98	20	0.00*
Father's Occ. 1	1363	47.34	40	0.20
Father's Occ. 2	1418	52.26	40	0.09

---

*Statistically significant

Again, Ethnicity was strongly related to birth-years. The finding that stands out most is the small number of North Europeans referred in the 1947 to 1951 interval (high school years 1961 to 1965). There were only seven, as compared to 55 Hispanics and six other minorities. Both before and since that interval North Europeans accounted for 44 to 54% of all cases referred, and Table 18 shows that the percentages of North Europeans referred since then have remained fairly stable, while the percentage of Hispanics has declined from 79 to 26%, and Blacks has increased from 6 to 18%.

TABLE 18

Birth Year Groups by Ethnicity 1

Ethnicity I													
Single Parent	2	4	0	0	12	2	28	3	16	6	58	4	
North Asiatic	2	4	1	2	8	2	13	2	2	1	26	2	
North European	23	49	7	10	256	49	416	54	119	44	221	49	
Hispanic	16	34	56	80	196	37	197	26	69	26	527	31	
South Asiatic	0	0	1	2	2	0	9	1	4	2	16	1	
South European	2	4	1	2	19	4	25	3	9	3	56	3	
Black	2	4	4	6	35	7	82	11	49	18	172	10	
TOTAL											1676	100	165

TABLE 19

Birth Year Groups by Ethnicity 2

Ethnicity II													
Single Parent													
North Asiatic	1	2	1	2	5	1	7	1	2	1	16	1	
North European	21	46	7	11	253	48	401	52	117	43	799	47	
Hispanic	19	41	49	78	207	39	222	29	75	28	572	34	
South Asiatic	0	0	1	2	4	1	12	2	4	2	21	1	
South European	3	6	1	2	24	4	38	5	12	4	78	5	
Black	2	4	4	6	38	7	94	12	60	22	198	12	
TOTAL											1684	100	157

Ordinal place was also significantly related to birth-year intervals (Ordinal Place I, P = 0.01; Ordinal Place II, P = 0.02). Decreasing proportions of first and middle children were referred to Psychological Services, whereas the proportion of younger children increased. Since the proportion of middle children has remained steady since 1951 (high school year 1965) while there is an inverse relation between oldest and youngest, as shown in Table 20 the increase in youngest children does not mean more families with less than three children, but rather, a direct increase in youngest child referrals.

Table 20 - Birth Year Groups by Ordinal Place I

TYPE OF CASE	Birth Year												MISSING
	1942-46		1947-51		1952-56		1957-61		1962-66		TOTAL		
	N	%	N	%	N	%	N	%	N	%	N	%	N
All Variables Known													
Oldest	12	39	3	30	118	30	185	29	47	22	365	28	
Middle	14	44	6	60	211	54	318	49	103	47	652	50	
Youngest	6	19	1	10	61	16	143	22	69	32	280	22	
TOTAL											1297	100	
Background Clear													
Oldest	7	30	1	20	75	34	108	32	28	20	219	30	
Middle	12	52	3	60	107	49	155	45	65	47	342	47	
Youngest	4	17	1	20	37	17	79	23	45	33	166	23	
TOTAL											727	100	
Background Changing													
Oldest	5	56	2	40	43	25	77	25	19	24	146	26	
Middle	2	22	3	60	104	61	163	54	38	47	310	54	
Youngest	2	22	0	0	24	14	64	21	24	30	114	20	
TOTAL											570	100	
Total Research Sample													
Oldest	14	35	4	33	130	30	204	28	59	23	411	28	
Middle	18	45	7	58	228	53	354	50	120	46	727	50	
Youngest	8	20	1	8	73	17	163	22	79	31	324	22	378
TOTAL											1462	100	

Table 21 - Birth Year Groups by Ordinal Place II

TYPE OF CASE	Birth Year												MISSING
	1942-46		1947-51		1952-56		1957-61		1962-66		TOTAL		
	N	%	N	%	N	%	N	%	N	%	N	%	N
All Variables Known													
Oldest	11	34	3	30	114	29	175	27	45	20	348	27	
Middle	14	44	6	60	207	53	319	49	102	47	648	50	
Youngest	7	22	1	10	69	18	152	24	72	33	301	23	
TOTAL											1297	100	
Background Clear													
Oldest	7	30	1	20	78	34	108	32	28	20	219	30	
Middle	12	52	3	60	107	49	155	45	65	47	342	47	
Youngest	4	18	1	20	37	17	79	23	45	33	166	23	
TOTAL											727	100	
Background Changing													
Oldest	4	44	2	40	89	23	67	22	17	21	129	23	
Middle	2	22	3	60	100	59	164	54	37	46	306	54	
Youngest	3	33	0	0	32	19	73	24	27	33	135	23	
TOTAL											570	100	
Research Sample Total													
Oldest	13	33	4	33	125	29	195	27	56	22	393	27	
Middle	18	45	7	58	222	51	357	49	119	46	723	49	
Youngest	9	23	1	8	84	20	170	24	83	32	347	24	
TOTAL											1463	100	387

Also, there is a significant relation between the sexes and birthday year intervals (P = 1.02). There were twice as many boys as girls in the total sample, and the proportions of girls has decreased from 47 to 28% over successive five-year intervals, while boys have increased from 53 to 72%.

TABLE 22 - Birth Year Groups by Sex

TYPE OF CASE	Birth Year 1942-46		1947-51		1952-56		1957-61		1962-66		TOTAL		MISSING
	N	%	N	%	N	%	N	%	N	%	N	%	N
All Variables Known													
Males	19	59	6	60	254	65	440	68	157	72	876	63	
Females	13	41	4	40	136	35	206	31	62	28	421	83	
Total											1297	100	
Background Clear													
Males	13	57	3	60	142	65	232	68	95	69	485	67	
Females	10	44	2	40	77	35	110	32	43	31	242	33	
Total											727	100	
Background Changing													
Males	6	67	3	60	112	66	208	68	62	77	391	69	
Females	3	33	2	40	59	34	96	32	18	23	179	31	
Total											570	100	
Total Research Sample													
Males	40	53	47	63	367	64	546	68	214	72	1214	67	
Females	85	47	28	37	204	36	261	32	83	28	611	33	
Total											1825	100	16

CONCLUSIONS: This study shows significant trends in the demographic data across birth-year intervals. Additionally, there are distinct differences in percent for cross tabulations based on the different matrices, though the general trends seem congruent. The sharp increase in Hispanic cases from 1961 through 1965 reflected policies relating to, first, the establishment for the "educationally mentally retarded" which caught up unwarranted numbers of bi-lingual students and children of laborers. The rejection of such classification of these students soon followed and a "transition" program for their removal from these classes, in addition to careful assessment of their cognitive skills was begun. Other trends seem to reflect the changing ethnic composition of the District as shown in Table 14 .

SECTION III

PERSONAL INTERACTION INVENTORY

INTRODUCTION:

It is important to recognize that the model for assessment being developed here relies on examination of one sample of student materials from multiple points of view. It is assumed that a student being tested is personally involved in displaying mental and social competence and, or, in protecting his or her personal integrity; and that such motivation results in a sample of the coping skills the student has available. Therefore, it is important to analyze what is produced, and to compare it with all other data we have, 1) for what it can tell about each of the developmental facets shown in Figure 12 on page 59, and 2) for evidence of integration among these facets. It is the re-examination of the sample in terms of multiple dimensions (e.g., content learning, mental skills, problem-solving strategies, social interactions, values, etc.) that tells what the youth has extracted from experience, what kind of person he or she is trying to be, what tools are available to reach this aim, and where conflicts and deficiencies lie.

The part of the project described in this section deals with an inventory of the student's skills. For each student who is referred for psycho-educattional study, a verbatim record of test responses and comments is made, and careful notes on behavior are taken. Skills of various kinds are then assessed by means of an inventory checklist. The checklist, which was originally derived from a catalogue of the responses found on 100 test records includes 1) the level of performance for each subtest, 2) problem-solving strategies used, 3) uncertainty or defeatism displayed, 4) cognitive skills displayed (both rightly and wrongly used), and 5) personal interactions with the tester.

For the current project year, the "personal interaction" segment was selected for refinement and validation because of its primary importance in assessment of chronic dependency which interferes with learning in Special Education students. Once an appropriate instrument is available, it is expected that studies of personal interactions in the test situation will demonstrate role-related habits carried over from other settings. For, example, when previous interactions have taught the student how to get clarification, focus on tasks in the presence of others, etc., this will carry over to relations with the tester; or conversely, if dependency, aggressive behavior, oppositionalism or other interfering interactions are practiced elsewhere, they would also appear. It is felt that these kinds of responses would also be observed when content requiring mental skills similar to those required on the test is presented in classrooms. The original checklist set up for this part of the assessment has been revised several times from successive samples of cases, but it remains cumberson, empirical in design, and in need of refinement and factor analysis.

Background:

A review of the literature on "dependency" (Belz, 1970) shows it to be a complex psychological construct, variously defined, and usually dealt with as a trait. Moreover, no satisfactory means of separating out such learned forms as polite behavior, manipulative responses, aversion to seeking help or the like was found, so that, as a trait, it cannot be distinguished from "real" dependency based on inability to perform under any circumstance. More recent work has concentrated operationally on "learned helplessness," however.

"Learned helplessness" is defined as a perception that one's own response is not related to the "occurrence or termination of an aversive event," and that failure is due to stable, uncontrollable factors which are insurmountable so that performance deteriorates when further effort is made. These factors may be seen as fixed internally (e.g., one's own ability) or externally (e.g., unequal treatment, unfair task, etc.) so that the student does not take responsiblity for failure, and does not attribute it to any variable that is under his or her control (e.g., amount of effort); and any sort of failure is followed by a decrease in speed and, or, accuracy (Dweck and Repucci, 1973). In the initial study of this variable, it was noted that children reacted differently to identical feedback experiences in terms of such social cues as the characteristics of the evaluator, presumably following ways they had learned to interpret similar experiences in the past. As a function of their individual histories, they responded differently to "success agents" who gave them soluble problems and "failure agents" who gave them insoluble problems. Moreover, even after a great number of success experiences, a child who attributed failure to lack of ability did not improve in coping with failure. Dweck (1975) then trained "helpless" children to adapt by attributing failure to lack of effort and taking more responsibility.

Parsons (1976) found that girls tend to have a lower expectation of success and tend to assume personal (internal) responsiblity for failure by age 6 or 7 years. Following up on sex differences, Dweck (1976, 1978) found that girls showed more "learned helplessness" than boys, especially with female adults. Teachers, especially females, tended to criticize girls in task-related terms and for lack of ability, but praise was for aspects irrelevant to intellectual functions (diligence, motivation, conduct) rather than intellectual quality or general ability; and teachers were generally positive toward girls. Male teachers of girls were more apt to clarify the girl's understanding and provide another opportunity for the correct response. "Failure feedback" of this kind, delivered by male adults and peers, was viewed by girls as effort-related, and performance improved.

Overall, boys were criticized more than girls, especially for non-intellectual behavior (motivation, neatness, conduct), which impairs the meaning of the feedback on intellectual qualities. The boys tended to attribute failure to teacher unfairness or lack of effort unless criticism came from peers. Moreover, boys tended to maintain belief in their ability to succeed in new situations by testing the environment. Thus, with new teachers they have reasons for renewed effort; but for girls, who tend to attribute failure to their own lack of ability, a cumulative effect is found since this attitude is generalized, untested, to new situations and similar tasks.

Parsons (1976) recommended that "failure feedback" should focus on the quality of work, accompanied by strategies to improve performance; and that failure should be attributed to lack of effort, while success should be attributed to a stable, internal variable like "ability." He also recommended competent female models and warned parents not to promote low expectations of success or reinforce cultural stereotypes.

Other well-known constructs such as test anxiety, avoidance, and aggressive responses were not researched due to lack of time, though responses which might be classified in this way are included in the checklist. Instead, the project statistician and two of the psychologists turned to the actual observed responses, as catalogued in the checklist, and each made a tentative classification by which a new sample of protocols could be scored. Then 100 test protocols were scored, modifying the classification to fit the data; and the first step in computer analysis of the resulting material was taken by the time the project ended. As a result of this careful review of interactive responses, a comprehensive model for looking at such behavior as it either facilitates or interferes with task performance emerged, and will form the basis for further study.

METHOD:

All items in the Skill Inventory Checklist which reflected personal interactions other than correct test responses were abstracted, by subtest, and tentatively grouped as numbered variables. The resulting list is shown in Appendix C-I. It covered the 11 Wechsler subtests for both the Adult Intelligence Scale (WAIS) and the Intelligence Scale for Children (WISC), plus a reading sample obtained by having the student read the Vocabulary word list aloud, and a writing sample using the student's Sentence Completion responses. A sample of 100 cases was also drawn from District files for those students from the graduating classes of 1979 through 1981 who had been referred for school problems. Fifty of the students had had the WISC and 50 had been tested on the WAIS, and all had completed at least half of the Sentence Completion test. Since the goal was only to prepare an instrument for further use, special case numbers were assigned, and birthdate, year of graduation, and the tester's initials were recorded, but no demographic data were needed. The students' comments and behavioral responses were then tallied on the checklist. Some new items were added as they turned up on test protocols. It was also found that some items on the checklist were never used, or had very low frequencies, and these were deleted or re-combined. The resulting set of tallies had 148 variables.

Concurrently, labels for the variables and a general classification system were being worked out by the project statistician and another psychologist. The items seemed to fall into the following main categories: 1) negative response style, 2)help-seeking behavior, 3) "referents" (i.e., identification of self or others as problem-solvers) and 4) positive, or "ideal" response style. When this rubric was then fitted to the data collected from test protocols, it was evident that responses ranged from a "helpless" generalized reaction as described by Dweck (1973) to well-practiced skills for integrated responses, avoidance, "turning off", or shifting to personal interactions of a distracting kind. Thus, a model emerged which progressed from responses showing "least control" over the task, situation, self and tester, to those showing "greatest control," as presented in the following outline, and diagrammed in Figure 7. With questions as to underlying motives for such responses held in abeyance, it is assumed that, in adolescents, these observed responses reflect well-established habit patterns. It is the ultimate goal of this research to determine how such habits develop, since most interfere with task performance to some degree.

1. Generalized reactions
    - 1.1 The student assumes undifferentiated relations with others, vaguely including the tester, and assumes that all share the same thoughts so that ideas are not specified, and there is no real com-unication. The student reacts and responds to the tester rather than thinking for self.
    - 1.2 There are extraneous movements, talk, noises, and expression of affect which do not directly affect the task or the tester.

2. Task orientation accompanied by uncertainty and dependence.
   2.1 The student responds to the task while also displaying or expressing uncertainty.
   2.2 The student downgrades self, predicts failure, displays and expresses the role of one "having a hard time," judges own performance as poor, apologizes.
   2.3 The tester intervenes and the student responds positively.

   (Note: from 1.1 through 2.3 the student does nothing to directly control the situation, but uses subtle cues which tend to draw the tester in to interact in some way.)

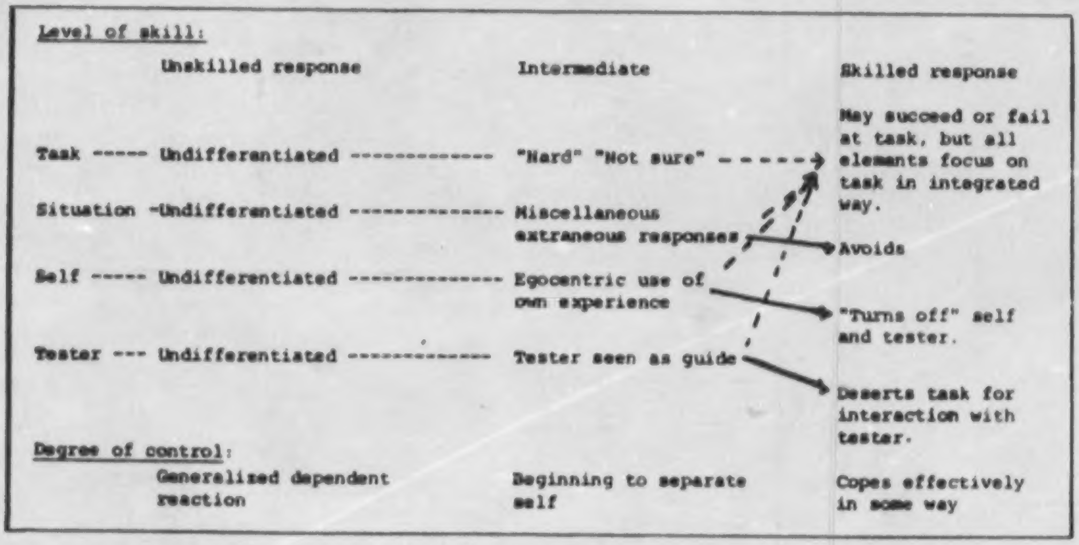
3. The student begins to separate self and egocentrially relies on, or is restricted to his or her own personal experiences and associations, expecting acceptance and understanding.

4. The student has mastery over the task and him or herself.
   4.1 An optimum integration of self, task, test situation and tester is achieved.
   4.2 A positive, motivated, fairly confident role is played. The student is fairly impersonal, but very cooperative, and may explain his or her own internal mental processes.

5. The student responds to the test situation with resistance and avoidance, showing little interest, and making little effort. If there is a response, it is in an abrupt, critical, argumentative, or questioning manner, and responses are vague, generalized, or circular.

6. The student takes over inappropriately, directly involving the tester in chatting, questioning about the test, the situation, or the tester; or gives directions, responds with challenging or provocative questions, or puts blame for difficulties on others.

Figure 7. Model for classifying personal interactions in a task situation.


Level of skill:
Unskilled response
Intermediate
Skilled response
Task ----- Undifferentiated
"Hard" "Not sure"
May succeed or fail at task, but all elements focus on task in integrated way.
Situation -Undifferentiated
Miscellaneous extraneous responses
Avoids
Self ----- Undifferentiated
Egocentric use of own experience
"Turns off" self and tester.
Tester --- Undifferentiated
Tester seen as guide
Deserts task for interaction with tester.
Degree of control:
Generalized dependent reaction
Beginning to separate self
Copes effectively in some way

Coding the data: To reduce subjectivity in the original skill inventory, all subtest titles have been changed to operational definitions of the task, reflecting face validity only. Similarly, for the items in the "personal interaction" catalogue set up for this project, the separate items, rather than the numbered variables (see checklist in Appendix C-I), were used to tally responses as observed, with a plan to combine them into constructs after preliminary analysis was done. The 148 variables which resulted are listed on Pages 45 through 46. Figure 8, which follows, shows the occurrence of these variables in each of the WAIS and WISC subtests. No subtest produced instance of all the responses. The Information, Vocabulary and Comprehension tests produced the largest numbers (100+), while the fewest were found on the Coding subtest (17). Only three variables occurred on all 13 subtests; these were: "smiled," "commented on own physical state," and "tester repeated, urged, prompted, questioned." The variables were scored "zero" if the response did not occur, and "1" or "2", depending on intensity if it did occur. A detailed scoring manual was prepared, of which only sample pages are shown in Appendix C-II since analysis showed that major revision is needed.

Analysis: Due to time constraints, statistical analysis focused on only two of the subtests, namely, Information and Comprehension. The WISC and WAIS samples were analyzed separately. Not all variables occurred on both tests so that there were 90 in the WISC Information, 75 in the WISC Comprehension, 92 in the WAIS Information, and 90 in the WAIS Comprehension analyses. The goal was to: 1) explore the grouping of the variables and the underlying factor structure for each subtest; 2) eliminate duplicate or redundant elements; and 3) select variables for inclusion in the final checklist.

RESULTS:

Factor analyses were attempted for each of the four scales, using various statistical packages (BMD, BMDP4M, SPSS Factor Analysis, SAS Factor Analysis) but in each case the result was the same. The factor analysis could not be completed due to the format of the data. The BMDP4M correlation matrix for WISC Comprehension is included as a sample in Appendix C-III.

Factor analysis relies on the manipulation of correlation matrices in order to reduce or rearrange the data into smaller sets of factors. The procedure explores whether or not a structure of relationships exists among the variables, as hypothesized. The analysis consists of three inter-related processes. First the correlation matrix is prepared. Initial factors are then extracted in an attempt to reduce the data. Finally,the factors are rotated into a final solution.

The problem which prevented the extraction of final factor solutions from the four sets of data concerned the correlation matrices. Many high, or identical sets of correlations were found among the independent variables on each scale. Such correlations indicate a problem of multicolinearity, and the independence of the independent variables is questionable. Harmon (1976) points out that when multicolinearity is evident, "the correlation matrix must be singular and its inverse cannot be computed."[1] A matrix is singular when the determinant of the square matrix is found to be zero. If the matrix's inverse cannot be determined, then the squared multiple correlations cannot be computed.

LIST OF PERSONAL INTERACTION ITEMS FITTED TO A CLASSIFICATION MODEL

- 1. Total dependence - generalized reaction
  - 1.1 Undifferentiated relationships with others/tester
    - 1.1.1 Pronoun references
      - (4) "I"
      - (5) "you"
      - (6) "we/us/our"
      - (7) "him/her/she/he/his/hers"
      - (8) "them/they/everyone etc.7names
    - 1.1.2 Echoed
      - (9) cliches on patriotism, religion, slogans
      - (10) family conversation
      - (11) social talk
      - (12) formal
    - 1.1.3 Lets tester guide response
      - (13) lets tester guide (1 or 2)
      - (14) performed from the tester's standpoint
    - 1.1.4 Assumed tester has same thought, can finish ideas
      - (15) shook head "no" (1 or 2)
      - (16) used hands to point or gesture (1 or 2)
      - (17) trailed off for "you" to finish
  - 1.2 Extraneous reactions did not directly affect task/tester
    - 1.2.1 Movements
      - (18) tapped
      - (19) hand or leg movements
      - (20) played with materials
      - (21) did something for self with object (grooming, food)
      - (22) whole body movements
      - (23) did somthing to self without object (scratched)
      - (24) sighed
      - (25) yawned/stretched
    - 1.2.2 Talk
      - (26) Problem-solving verbalized (1 or 2)
      - (27) reflected elements aloud (1 or 2)
      - (28) used fillers
    - 1.2.3 Noises
      - (29) made noises to self (e.g. hummed, whispered)
    - 1.2.4 Affective reaction
      - (30) smiled/laughed (1 or 2)
      - (31) joked, playful testing of limits

- 2. Student responds to task, but uncertainly
  - 2.1 Uncertain attitude
    - 2.1.1 Displayed
      - (32) shrugged
      - (33) inarticulate response, noise
      - (34) changed response
      - (35) commented on ambiguities
      - (36) "maybe"
      - (37) "probably"
      - (38) left unspecific, rounded off
      - (39) "somekind of..."
      - (40) "around there"
      - (41) "somwhere about..." (1 or 2)
      - (43) left open ended ("whatever")
      - (42) "..or something/stuff like that..."
      - (44) repeated in questioning tone
      - (45) responded in questioning tone
    - 2.1.2 Expressed
      - (46) "I think"
      - (47) "I guess" (1 or 2)
      - (48) "I hope that's right"
      - (49) said "don't know", but continued on
      - (50) not quite sure (1 or 2)
  - 2.2 Negative attitude/"Difficulty"
    - 2.2.1 Displayed
      - (51) Exclaimed
      - (52) shakey voice, negative gestures
    - 2.2.2 Expressed
      - (53) negative reference to self
      - (54) indicated expectation of failure (1 or 2)
      - (55) said hard to verbalize
      - (56) complaint of "hard"
      - (57) complaint of getting harder
      - (58) expressed/described own negative reaction
      - (59) repeated own response
      - (60) apologized for self or work
      - (61) Heard wrong, substituted, turned pieces over, followed own rules w/o asking.

2.3 Dependent on tester's intervention
  2.3.1 Items
    (62) tester intervened (1 or 2)
    (63) tester intervened on beginning items
    (64) student increased output after intervention
    (65) student increased output after saying "don't know"

3. Student begins to separate self and rely on own background and associations
 3.1 Egocentric
  3.1.1 Referred to self
    (66) "I/me/my"
    (67) personal experience used
    (68) referred to home or pets
    (69) referred to family (1 or 2)
    (70) referred to TV/Movies
    (71) referred to class, friends, reading source
    (72) referred to unspecified source
    (73) comments about own body or condition
  3.1.2 Excused self
    (74) lack of experience
    (75) lack of academic exposure
    (76) forgot (1 or 2)
    (77) outside of own range
    (78) lack ability in a given area
4. Student has control over task and self; cooperates
 4.1 Explains self to tester
  4.1.1 Items
    (79) "don't get it"
    (80) "don't know meaning/how to do it" (1 or 2)
    (81) "no idea" (1 or 2)
    (82) "couldn't say/guess"
    (83) "never noticed/thought about"
    (84) "that's all I can..."
    (85) "only thing can think of..."
    (86) "can't remember"
    (87) indicated inabliity to recall something familiar
    (88) "I thought...but"/changed idea
    (89) "can't" express/explain
    (90) "Knows...but can't say/do"
    Cooperative/Took Initative
  4.2.1 Items
    (91) polite
    (92) indicated when through
    (93) pushed work toward tester/helped
 4.3 Oriented toward task
  4.3.1 Items
    (94) recalled from previous testing
    (95) expressed enjoyment of task
    (96) animistic toward materials
    (97) examined materials/score
    (98) referred to items by number
 4.4 Competence motivation
  4.4.1 Displayed
    (99) neat placement
    (100) commented on time
    (101) obviously hurried
    (102) continued on own/ past time
    (103) expanded spontaneously
    (104) qualified carefully
    (105) corrected self
    (106) corrected self on beginning items
  4.4.2 Expressed
    (107) trying best (1 or 2)
    (108) determination
    (109) curiosity
    (110) glad when right
 4.5 Positive toward self
  4.5.1 Items
    (111) expressed mastery/ease
    (112) compared self positively

5. Student responds with resistance and avoidance of situation
  5.1 Not interested/ too much effort
    5.1.1 Items
      (113) perfunctory/superficial guessing
      (114) negative/bored tone or gestures
      (115) showed surprise/postured on beginning items (1 or 2)
  5.2 Negative comments on test
    5.2.1 Items
      (116) exclaimed/ criticized items
  5.3 Argued/suspicious
    5.3.1 Items
      (117) argued/suspicious comment/disagreed/"impossible"
  5.4 "Generalized away" question
    5.4.1 Items
      (118) "obvious"/"lots of things"
  5.5 Abrupt "turn off"
    5.5.1 Items
      (119) "nope"/"nothing to tell" (1 or 2)
      (120) "beats me"
      (121) "that's about it"/"I'm done"/pushed away (1 or 2)
      (122) "wouldn't know"
  5.6 Excused own lack of interest
    5.6.1 Items
      (123) "I'm not into..."

6. Student takes over task inappropriately
  6.1 Tried to/did take over
    6.1.1 Items
      (124) handled materials by self
      (125) set own pace
      (126) changed rules

7. Student deserts task for interaction with tester
  7.1 Directed tester
    7.1.1 Items
      (127) "let's say/do..."
      (128) "Teacher- help me/show me"
      (129) "wait"
      (130) "let me think/see"
      (131) "skip that"/"don't ask me"
      (132) "miscellaneous directions/challenged tester"
  7.2 Asked tester to:
    7.2.1 Items
      (133) confirm instructions/directions
      (134) confirm answers (1 or 2)
      (135) repeat elements/"what?"
      (136) explain rules/clarify rules
      (137) explain general ;directions/items
      (138) define words
      (139) help/narrow scope of item
      (140) give answer/answer student's question
      (141) give personal feedback (1 or 2)
      (142) give feedback of relative status of ; student (1 or 2)
      (143) frame/structure items
      (144) answer personal questions
      (145) any response under Items # 133-144 on beginning items
      (146) general interactive behavior (too many instances to separate and record)
  7.3 Resisted/challenged tester
    7.3.1 Items
      (147) "you" put on defensive for asking
  7.4 Accused tester
    7.4.1 Items
      (148) "you're" not fair

Figure 8.

Distribution of Personal Interaction Item Variables, by Subtest. (WISC = left; WAIS = rt.)

Var.	Item (Col.)	Info. 01	Compr. 02	Class. 03	Bdg. 04	Vocab. 05	Pict.A 06	ObjAs 07	Pict.C. 08	Arith 09	Spat. 10	Digits 11	Cler. 12	Sent. 13
	1													
	2													
	3													
1.1.	4													x - x
	5	x - x	x - x	x - x	x	x - x								x - x
	6		x			x	x							x - x
	7		x		x	x - x			x					x - x
	8	x	x	x		x								x - x
	9			x	x									x - x
	10	x			x									x - x
	11													x - x
	12													x - x
	13	x				x - x	x - x		x		x			x
	14				x - x		x	x			x - x		x	
	15	x - x	x - x	x - x	x - x	x - x	x - x		x	x	x - x	x - x		
	16	x - x	x	x		x - x			x - x					
	17	x - x	x - x	x - x		x - x			x - x					x
	18	x	x - x	x		x	x					x - x		
	19	x	x - x	x - x					x	x			x	
	20										x - x			
	21		x			x - x	x		x		x			
	22		x											
	23		x	x	x	x		x						
	24	x	x - x	x		x	x - x	x - x		x - x	x - x	x		
	25		x - x	x - x		x	x - x	x - x		x - x	x - x	x		
	26	x - x	x	x - x		x - x	x	x - x	x - x	x - x	x - x		x - x	
	27	x - x	x	x - x	x	x - x				x - x		x		
	28	x - x		x		x - x					x			
	29						x	x	x	x	x	x		
	30	x - x	x - x	x - x	x - x	x - x	x - x	x - x	x - x	x - x	x	x - x	x	x
	31	x - x	x - x	x - x			x - x	x - x	x - x		x			
2.	32	x - x	x		x	x - x			x					
	33	x - x	x - x	x - x	x	x - x				x	x			
	34	x - x	x - x	x - x		x - x			x	x - x		x		
	35		x			x	x	x						
	36	x - x	x - x	x	x	x - x			x		x			
	37	x - x	x - x			x			x - x	x				
	38	x - x								x - x				
	39	x - x	x - x	x		x					x			
	40	x - x												
	41	x - x		x	x					x - x	x			
	42	x - x	x - x	x - x	x	x - x			x	x	x	x - x		
	43	x - x	x - x	x - x	x	x - x			x - x	x		x - x		
	44	x - x	x - x	x - x		x - x			x - x	x - x		x -		
	45	x - x	x - x	x - x	x	x		x	x - x	x - x		x - x		
	46	x - x	x - x	x - x	x	x - x	x		x - x	x	x	x		
	47	x - x	x - x	x - x	x - x	x - x	x - x		x - x	x	x	x - x		
	48	x - x	x - x				x		x		x			
	49	x - x	x - x	x - x	x	x - x		x	x - x	x - x		x - x		
	50	x - x	x	x	x	x - x	x	x	x	x - x				
	51	x - x	x - x	x		x - x	x	x - x	x - x	x - x	x - x	x - x		
	52	x		x	x		x			x		x		x
	53	x - x	x	x	x	x	x	x		x	x - x	x		
	54	x	x	x - x		x - x	x - x	x	x - x	x - x	x - x	x		
	55						x							
	56	x	x	x	x	x	x - x	x	x - x	x - x	x - x			
	57	x			x	x			x - x	x	x - x			
	58	x - x	x			x - x	x - x	x - x		x	x - x			
	59			x	x	x	x - x	x		x	x - x	x - x	x - x	
	60		x		x		x				x	x		x - x
	61	x						x - x	x - x	x - x				
	62	x - x	x - x	x - x	x	x - x	x - x	x - x	x - x	x - x	x - x	x - x	x	x - x
	63	x - x								x				
	64	x - x	x - x	x - x	x	x - x	x - x	x - x	x - x	x - x	x - x			
	65		x - x			x								
3.	66	x - x	x - x	x - x		x - x				x	x			x - x
	67	x - x	x - x		x		x			x				
	68	x												
	69	x - x	x - x	x	x	x - x		x						
	70	x - x	x		x	x - x								
	71	x - x		x		x - x				x				
	72	x - x	x			x - x								
	73	x - x	x - x	x - x	x	x - x	x - x	x - x	x - x	x - x	x - x	x - x	x - x	x
	74	x - x	x - x	x	x	x	x	x	x - x	x		x		x - x

Figure 8. ,Continued

Distribution of Personal Interaction Item Variables, by Subtest. (WISC = left; WAIS = rt.

Var.	Item (Col.)	Info. 01	Compr. 02	Class. 03	Rdg. 04	Vocab. 05	Pict.A 06	ObjAs 07	Pict.C. 08	Arith 09	Spat. 10	Digits 11	Cler. 12	Sent. 13
	75	x - x	x	x		x - x				x				
	76	x - x	x	x		x	x				x			
	77	x	x		x									
	78	x - x	x		x	x		x	x	x - x	x	x		x
4	79	x	x - x	x			x - x	x		x - x	x - x	x		
	80	x - x	x - x	x - x	x - x	x - x	x - x	x	x - x	x - x	x	x		x
	81	x - x	x - x	x		x - x				x				
	82	x - x	x	x	x	x - x		x	x - x	x - x	x	x - x		
	83	x	x x	x		x					x			
	84	x - x	x x	x - x		x - x			x			x		
	85		x x	x	x	x - x								
	86	x - x	x			x - x				x	x	x - x		
	87	x - x	x x	x		x - x		x		x	x			
	88	x	x	x	x				x	x	x			
	89		x x	x - x	x	x - x			x - x					
	90	x		x	x	x - x			x	x - x				
	91	x - x	x			x	x			x				x
	92			x			x	x	x		x - x			
	93	x - x				x	x - x	x - x	x - x		x			
	94	x	x	x			x	x	x		x - x	x		
	95						x - x	x	x	x	x			
	96							x - x	x - x	x	x - x			
	97						x - x				x			
	98				x - x	x			x - x					
	99						x				x - x			
	100							x			x - x		x	
	101					x	x - x	x - x		x - x	x - x			
	102	x - x			x - x		x - x	x		x	x - x			
	103	x - x	x - x	x - x		x								
	104	x - x	x	x		x - x								
	105	x - x	x	x - x	x - x		x - x	x - x	x - x	x - x	x - x	x - x	x	
	106	x					x				x			
	107	x	x		x	x	x		x - x		x - x			
	108	x - x	x					x		x	x - x			
	109		x - x											x - x
	110			x		x	x							
	111	x - x	x	x - x	x - x	x - x	x - x	x - x	x - x	x - x	x - x			
	112									x				
5	113		x - x	x		x	x - x	x - x	x - x	x - x	x - x	x - x	x	
	114		x	x			x - x	x			x			
	115	x - x	x				x							
	116	x	x	x - x	x		x - x	x - x	x		x - x			x x
	117		x - x	x - x		x	x - x	x	x - x	x	x			x
	118	x - x	x - x	x - x		x		x		x		x		
	119	x - x	x - x	x		x - x			x	x				
	120	x - x		x		x			x	x				
	121	x - x	x - x	x	x	x - x			x			x		
	122		x x		x	x				x - x	x - x	x	x	x
	123	x	x			x		x	x					x
6	124	x - x	x - x						x		x			x
	125						x - x				x - x			
	126	x				x				x	x			
7.	127				x - x			x	x - x	x			x - x	
	128	x	x - x	x	x				x	x	x - x			
	129													
	130	x - x		x	x	x - x	x - x	x	x - x	x - x	x - x	x		
	131	x - x	x - x			x - x			x - x	x	x			
	132	x	x - x	x	x	x - x			x	x - x		x		
	133	x	x	x		x - x	x - x	x - x	x - x	x	x - x	x - x		x x
	134	x		x - x	x - x	x - x	x - x	x - x	x - x	x	x - x	x - x	x	
	135	x - x	x	x - x	x	x - x	x - x	x - x	x - x	x - x	x - x	x - x		
	136	x - x	x - x	x - x		x - x				x - x		x - x		
	137	x		x	x	x	x	x - x				x		x
	138	x	x - x	x - x		x - x	x	x - x	x - x	x	x - x		x - x	
	139		x - x	x - x			x							
	140	x - x	x - x			x - x	x - x	x - x	x		x - x	x		x
	141	x - x	x - x	x		x - x			x - x	x				
	142	x	x		x	x - x	x - x	x	x	x	x - x		x	
	143	x	x		x					x	x			x
	144	x - x	x - x	x		x	x - x	x - x	x - x	x	x - x	x		
	145	x - x	x		x - x		x	x	x - x		x - x			x - x
	146									x				
	147	x - x	x - x	x - x		x - x	x - x	x - x	x - x	x	x - x		x - x	
	148	x	x - x	x	x - x	x	x - x	x - x			x - x	x	x - x	x

The correlation matrices for both subtests of the WISC and WAIS were found to be singular, indicating a need to re-think the variable definitions as well as underlying assumptions about their relationships. Since the subtests had been divided into the most basic and objective elements possible, the finding of multicolinearity, or interdependence of variables, supports the notion that the variables had been partitioned too minutely. Scores for variables were often low, and occurrence of responses quite scattered. Examination of the WISC Information matrix also indicated variables which correlate in an identical way with sizeable numbers of other variables, but not with each other, suggesting that what should be a single variable has been split. Thus, psychological contructs which combine items should be formed in accordance with theory so that variables can be re-defined in a more global way, and an attempt to maintain their independence by eliminating colinearity is needed. This work is being continued beyond the scope of this project.

DISCUSSION:

While it is disappointing that final steps in setting up the "personal interaction" inventory could not be completed during the project year, the model that was developed may have considerable importance for Special Education. Its usefulness lies not only in the assessment of "learned dependency" in high school students with school problems, but also in the observation that many students with chronic school problems shift almost at once from focus on an assigned task to a focus on the person who assigns it. With the means to recognize these interactions, antecedents and corrective measures can be explored.

SECTION IV

CORRECT KNOWLEDGE INVENTORY

The assessment model being developed here also requires an inventory of correct test responses. The "Correct Knowledge Inventory" checklist consists of 24 content areas into which correct responses for all items on the Wechsler Adult Intelligence Scale and Intelligence Scale for Children fall. It is scored by checking the correct responses in each category, and obtaining a category profile.

The Inventory has two functions. First, it supplements the skill inventory described in the last section, providing an analysis of the same data for content themes. Just as a student may tell of a strong interest in some area during an interview, and then display a lack of skills related to it, suggesting that he or she has picked up the interest only by watching, or by some other vicarious means, but does not practice it directly, so an inventory of correct knowledge can indicate the degree to which a student is involved in what is going on around him or her. We expect that knowledge profiles will reflect interest patterns, and also indicate whether, indeed, a student also knows enough about the more general references to the physical and social environment in the test (e.g., practical situations, food, money, tools, etc.) to indicate direct involvement in these areas in the home.

These determinations deserve far more attention than we usually find in assessments done by others because the data which emerge can be related to cognitive skill development in those areas of the profile most often used to diagnose "brain damage," and "perceptual" and "visual-motor" dysfunction, and sometimes "aphasia." In our reviews of such diagnoses, we often find conclusive evidence that the "deficits" lie in areas which are not valued in the students "learning space," are highly valued but the opportunity to learn and practice have been preempted by competitive persons in the home over many years; or where over-protection due to some real or feared condition has resulted in lack of opportunity to learn. The analysis of the same set of data from different vantage points will reveal such discrepancies.

Secondly, the Correct Knowledge Inventory is part of a larger framework for assessment of the cultural themes which make up a given student's orientation to the world around him or her. This framework is described in the next section. In developing a technique to identify cultural themes, it is important to recognize that wrong answers, as well as right ones, express such themes; in fact, even more than "correct" responses, they show alternative concepts and personal projections. The analysis of "error" is essential for adequate assessment since low test scores are totally ambiguous unless the nature and source of unacceptable responses is tracked down; no diagnosis made on the basis of a low test score, alone, should ever be accepted. The cultural implications of "correct" themes at high levels which few student reach are greater than at average levels, for they indicate abstract development in areas of interest. At low levels, they seem far less important than the alternative "wrong" themes which occur when a student searches for a response; however, this information is usually discarded by persons assessing learning problems.

Therefore, the student's profile of "correct" information has 1) been separated out as an index of experience with the general, or dominant, culture which standardized tests define, but it has 2) been given less weight in describing the make-up of themes in the individual student's "learning space" than more unusual responses. The preparation of an appropriate instrument for making the "correct" information inventory is the first, very necessary, step in validating any procedure for assessing cultural differences. The inventory form had been set up and was in use previously, but improvement and validation were targets for this year.

This section of the report covers the work that was done during the project year. We completed two series of reliability checks after the first one of which we improved the format and scoring instructions. We then scored a majority of the cases in our files. From these we made one pilot study to see if there were, indeed, differences in the knowledge profiles of average cases in those "learning space" cells where there were enough cases to make comparisons. Unfortunately, we could not complete the validation studies due to time constraints and the breakdwon of computer facilities during the last week of work. The analyses presented here are limited to what could be done quickly by hand.

METHOD:

From the scoring manuals for the WISC and WAIS, correct responses were classified under the 24 categories shown in Figures 9 and 10 on the following pages. For some items, several correct alternative answers exist, so these items appear in more than one category, and are starred. If these items were in the verbal subtests, the alternative chosen by the student was scored in the category indicated; but in performance items, where the clue to which a student responded might have been, for instance, a clock or a facial expression, both categories were scored since the student's focus could not be assessed in a correct answer. This method gave visual items somewhat more weight than verbal ones, though the degree to which this happened could not be determined at this stage.

Items were given number scores exactly as on test protocols for the most part. Thus, scores of "1" and "2" were used, but a "3" was given for a bonus. Total scaled score for the subtest was used for Block Designs and Coding, but it was converted to a score of "2" for a scaled score of "10", "1" if below 10, and "3" if above. This gave these subtests relatively less weight than others since they reflect mainly skills, with little informational content. A similar method was used to score Digit Span; i.e., a "2" was given for six digits forward, and for four digits in reverse, "1" if below those numbers, and "3" if above. Items missed were scored "0", and those not given were left blank.

The first reliability check was done after a trial of the instrument by two raters, each of whom did 15 WISC and 15 WAIS protocols. A number of errors and omissions on the check list were corrected, and the format made easier to use. Large differences in the interpretation and distribution of verbal alternatives were found, for which rules were agreed upon after discussion. Some problems were also found with protocols. First, some testers had merely checked correct items, while others wrote out the response; and beginning items had been by-passed in most cases. Instances of these kinds were scored "correct." Second, it could not be determined, sometimes, whether students had been given more advanced items which they failed, or whether the tester had stopped giving the items. Since data on failures and "not given" were needed to partial out differences in the level of academic skill shown by the total profile, it was felt that an error count, separate from "not given", might be helpful. In the end, both types of failure data were collected, and they were separated where it was possible to do so. The final scoring rules are shown in Appendix D.

Figure 9. WISC Correct Information Inventory

WISC "CORRECTNESS" INVENTORY

CASE NUMBER______________

PEOPLE: FEELINGS	RELIGION	PATRIOTIC/HISTORY	LIT/MUSIC
__nuisance*	__belfry	__discover America	__Romeo/Juliet
__brave	__catacomb	__July 4th*	__hieroglyphics
__nonsense	__vesper	__discover South Pole	__letter
__imminent		__Ghengis Khan	__fable
		__need for senators	__stanza
		__liberty/justice	__piano/violin
		__espionage	
		__sword*	

GEOGRAPHY	PROPERTY/MONEY	ANIMALS	OUTDOORS
__Chile	__nickel*	__dog 4 legs*	__sunset
__Greece	__dozen*	__milk from cow	__barometer*
__New York/Chicago*	__rubies*	__cat/mouse	__mountain/lake
	__C.O.D.	__pound/yard*	
	__lien	__donkey	
	__bills/cash	__fur from animal*	
	__charity*	__mantis	
	__diamond gem*		
	__card spade*		
	__gamble*		
	__shilling		
	__chattel		
	Arith: __#4* __#10*		
	__#5* __#11*		
	__#6* __#12*		
	__#7* __#14*		
	__#8* __#15*		
	__#9* __#16*		
		__dog puzzle	
	__card spade*	__fox's ear	__farmer/corn
		__fish's fin	__gardening/fishing*
		__fly antenna/nthg	__house shadow*
		__rooster's spur	
		__cow's hoof	
		__dog at picnic*	
		__horse	
		__cat's whiskers	

PEOPLE: ATTRIBUTES	HEALTH	FOOD	HOME AND FAMILY	CLOTHES
__two ears*	__stomach*	__fruit	__dozen*	__umbrella
__thumb	__cut finger	__boil water	__grocer bread	__cotton
__man's height*	__affliction	__buy sugar*	__buy sugar*	__rubies*
__hero	__asceptic	__beer/wine	__pound/yard*	__fur coat*
__nuisances*	__knife/glass*	__cut apple*	__paper/coal*	__diamond gem*
__girls/women		__lemon/sugar	__scissors/pan*	__hat
			__cushion	
			__spangle	
			__knife/glass*	
__girl's mouth		__dog at picnic*	__table leg	__comb
__fingernail			__door hinge*	__scissors*
__MAN's eyebrow				__button-holes
__mother/child				__hat band
__mannikin				__umbrella*
__man's face				

PEOPLE: ACTIONS	WORK	MORAL	SPORT	EMERGENCIES
__join*	__gov't job test	__friend's toy		__train track
__seclude	__Arith. #11*	__fight child		__shipwreck
__flout		__lock up criminal	__gamble*	__Hara-kiri
__walk/throw		__keep promise	__card spade*	
__sword*		__charity/beggar*		
__burglar*	__late to work*	__burglar*	__card spade*	__boy with matc
__rain/umbrella	__gardening/fish*		__garden/fishing*	

SCIENCE/TECHNOLOGY	VEHICLES	TOOLS/MEASURES	CALENDAR/CLOCK
__stomach*	__bicycle	__turpentine*	__days in week*
__oil/water		__wood/brick	__seasons
__turpentine*		__knife	__Labor day
__barometer*		__scissors/pan*	__July 4th*
__paper/coal*		__nail	
__scissors/pan*		__pound/yard*	
__salt/water		__garden spade*	
__diamond*		__Arith # 9	
__join*			
__nitroglycerine			
__microscope			
__recede			
__ballast			
__thermometer bulb	__train puzzle	__scissors*	__late to wrk*
__house shadow	__auto puzzle	__door hinge*	
		__screw slot	
		__man on scale	
		__late to work*	
		__umbrella*	

SIZE AND SHAPE	NUMBER	
__diamond*	__animal 4 legs*	__man's height*
	__2 ears*	__dozen*
	__days in week*	__nickel*
	__pounds in ton	
	__New York to Chicago*	__first/last
	__49/12¢	
	__Arithmetic score	
	__digits forward	
	__digits backward	
__Block Design score	__card spade*	
	__Coding score	

*responses fall in more than one category.

Blanks

BD____________ Age__________ NAME ______________

Figure 10. WAIS Correct Information Inventory

WAIS "CORRECTNESS" INVENTORY

CASE NUMBER__________

PEOPLE: FEELINGS

__remorse
__reluctant
__tranquil
__compassion
__ominous
__praise/punish

__man with dummy

RELIGION

__sanctuary
__Vatican
__Genesis
__Koran

PATRIOTIC/HISTORY

__flag colors
__presidents
__Washington bthdy*
__# of senators*

__flag stars*

LIT/MUSIC/ART

__sentence*
__Longfellow
__Hamlet
__Iliad
__poem/statue

__violin peg
__read comics*

GEOGRAPHY

__Chicago/Panama
__Brazil
__Italy
__New York/Paris*
__Egypt
__U.S. population*

__map of Florida

PROPERTY/MONEY

__consume*
__penny
__taxes
__land in city
__Arith #3*
__#4*
__#6*
__#7*
__#8*
__#9*
__#10*
__#11*
__#12*
__#13*

__card diamond*

ANIMALS

__dog/lion
__swallow*

__pig's tail
__crab's leg
__horse stirrup*
__bird's nest
__elephant

OUTDOORS

__cavern
__lost in forest
__North/West
__shallow brooks*

__dog's tracks
__snow on woodpile
__king fishing*
__tree shadow*

PEOPLE:ATTRIBUTES

__fortitude
__audacious
__woman's height*
__ethnology
__bad company*
__shallow brooks

__girl's nose
__mirror image
__man's fingers
__[illegible]'s eyebrow
__mannikin
__girl's profile
__hand puzzle

HEALTH

__thermometer*
__blood vessels
__born deaf
__eye/ear
__wash/disease*

FOOD

__breakfast
__slice
__consume*
__yeast/dough*
__fruit

HOME AND FAMILY

__bed
__domestic
__marriage license
__table/chair

__door knob
__water in pitcher*

CLOTHES

__fabric
__wash clothes*
__coat/dress
__dark/light cloth*

Blanks

NAME

____

Age__________ BD__________

PEOPLE:ACTIONS

__assemble*
__conceal
__hasten
__commence
__ponder
__designate
__terminate
__obstruct
__tirade
__iron is hot*

__hold-up/jail*
__read comics*
__girl and king

WORK

__child labor
__Arith. #13*
__#14*

MORAL

__find envelope
__sentence*
__bad company*

__hold-up/jail*

SPORTS

__matchless*

__card diamond*

EMERGENCIES

__calamity
__movie fire

SCIENCE/TECHNOLOGY

__consume ?
__assemble*
__regulate
__edifice
__thermometer*
__rubber trees
__dark/light cloth*
__yeast/dough*
__boiling point*
__egg/seed
__air/water
__wood/alcohol
__fly/tree

__water pitcher*
__man's glasses
__sun/shadow*
__door stuck

VEHICLES

__ship
__engine

__door handles
__car lock
__ship stacks
__stirrup*

TOOLS/MEASURES

__thermometer*
__axe/saw
__Arith. #8*
__#8*
__strike hot iron*
__repair

__water pitchers
__light bulb
__build house

CALENDAR

__months in year*
__Washington bthdy*
__weeks in year*
__winter

SIZE AND SHAPE

__enormous
__tangible
__perimeter
__hail

__Block Design score
__king fishing*

NUMBER

__matchless*

__New York/Paris*
__U.S. population*
__months in year*
__weeks in year*
__# of senators*
__one swallow*
__Arithmetic score*
__digits forward
__digits backward
__boiling point water*

__card diamond*
__flag stars*
__Coding score
__king fishing*

__woman's height*

*responses fall in more than one category.

Next, two more raters were trained and all test records through the Class of 1978 were scored. Duplicate sets of 14, 15, and 14 cases were scored by pairs of raters. The total point differences (not net differences) amounted to two percent for the 24 subtest categories, and seven, three, and one per cent for the count of items failed and not given. These discrepancies were scattered over 22, 35, and 21 percent of the categories, and 100 percent of the failure counts, for the three sets of cases. These results are summarized in Table 23 below.

Table 23. Reliability of scoring for the Correct Information Inventory

Rater pair	Number of cases compared	Total point differences				Net differences/Totals*		Number of mismatched scores**			
		24 Categories		Failure Count		Category Totals	Failure Count Totals	Category scores		Failure Counts	
		N	%	N	%			N	%	N	%
I/II	14	82	2	222	7	45/3793	34/3058	74/336	22	14/14	100
I/IV	15	96	2	285	3	70/4566	75/2851	126/360	35	15/15	100
II/III	14	62	2	28	1	16/3747	26/3014	71/336	21	14/14	100

* Compared to sum of both rater's scores

** Compared to number of scores per case, times number of cases.

All cells in the matrices described on page 16 which had more than two cases were listed next (See Appendix D). The cell numbers of cases for whom protocols had been scored were then looked up, and the cases were sorted by cell number. After cases given the WISC were separated from those given the WAIS, and all cases tested before the age of 13 had been set aside, those cells in which six or more WISC inventories remained were selected for comparison of average profiles.

Also, the inventory was reduced to only 12 categories. This was done when computation of the total possible scores for each category showed that some had only one or two items, particularly on the WAIS, and hence, percentage scores for these categories would be greatly distorted. The smaller categories were thus combined to create the reduced list which follows:

1. Humanities (Feelings, Religion, Patriotic/History, Lit/Music, Geography)
2. Animals
3. Human Attributes
4. Health/Food
5. Home and Family
6. Clothes
7. Human Actions
8. Sports/Outdoor/Calendar/Clock
9. Work/Money/Property/Vehicles
10. Science/Technology
11. Tools/Measures/Size and Shape
12. Number

The demographic data obtained for each case included only the Case Number, from which the Cell Number could be obtained, the birth year and age when tested, and the name of the student. The checklist format is designed so that names can be cut off once the scoring of all cases is completed and case numbers have been ascertained.

Subjects: The subjects used in the pilot study were those who had usable WISC protocols for tests given after the age of 12, and were in the following "learning space" cells:

Cell Number	Demographic Configuration	Number of Cases
076	Middle N. European boy with Technology Sex-type I father	10
077	Middle N. European boy with Technology Sex-type II father	8
136	Youngest N. European boy with Technology Sex-type I father	7
257	Middle N. European girl with Technology Sex-type II father	7
405	Middle N. European boy with father's occupation changing	12
406	Middle Hispanic boy with father's occupation changing	12
411	Youngest N. European boy with father's occupation changing	12
417	Oldest N. European girl with father's occupation changing	8
423	Middle N. European girl with father's occupation changing	7
424	Middle Hispanic girl with father's occupation changing	7

Analyses: The mean scores on the 12 categories, plus the mean number wrong and not given, were computed for each cell in the study, and the percent of the total possible score which each mean represented was determined. Since this method does not partial out differences in average level of abstract ability, which generally affect the knowledge profile across the board, the average category scores were indexed in terms of a constant obtained by dividing 100 by the percentage of correct responses in the average cell inventory. This step permits a direct comparison of cell profiles. Significance tests were postponed.

No attempt to normalize the category scales was made at this time. This means that profiles must be interpreted in comparison to the form of the profile for total possible scores shown in Figure 11 on page 56.

RESULTS:

Mean scores for each of the 12 categories, number of wrong responses and number of items not given are all shown in Table 24, along with whatever percentage of the total possible category score each mean represents. It can be seen that the percentage of correct responses varied from 39 to 56, wrong responses varied from 13 to 19 percent, and the percent of items not given ranged from 21 to 44. Thus, in about half the cells, the average student responded to less than half the items, resulting in sizeable differences in over-all level of abstractness for the cell populations reviewed. Then cell N's are too small to be conclusive, but a need to index scores to partial out such differences is evident when differences in profile configurations are studied.

The highest average scores were in Cells 76, 136, 411 and 417. These were middle and youngest N. European boys with fathers in Technology Sex-type I occupations, youngest N. European boys with fathers in changing occupations, and oldest N. European girls with fathers in changing occupations.

The lowest scores, overall, were in Cells 424 and 405. These were middle N. European boys and middle Hispanic girls with fathers in changing occupations. It should be noted that, while the proportions of errors for these two cells were low (13%) or moderate (18%), they were highest in number of items not given, with 44 and 42 percent. For contrast, the largest numbers of errors were for Cells 257 and 406. These were middle N. European girls with fathers in Technology Sex-type II occupations and middle Hispanic boys with fathers in changing occupations. Differences in average levels of confidence between these two groups might be suspected, with errors a function of the number of guesses a student was willing to take.

A simple tally of highest and lowest cells on each category is as follows:

Cell number	Highest category score found in the study	Lowest category score found in the study.
076	Sports/Outdoor/Calendar Work/Money/Property/Vehicles	None
077	Human Attributes Food/Health	Clothes
136	Animals Home and Family/Clothes Science/Technology	None
257	None	None
405	None	Tools/Measures/Size/Shape
406	None	Clothes
411	Sports/Outdoor/Calendar	None
417	Human Actions/Humanities Tools/Measures/Size/Shape	None
423	None	None
424	None	Humanities/Human Attributes Health/Food/Home and Family Human Actions/Sports/Outdoor/Calendar Work/Money/Property/Vehicles Science/Technology

Indexed scores which allow for differences in overall level of academic skills among the average cases for the various cells are shown in Table 20. The cell profiles for the 12 categories are also shown in Figure 11. There, they may be compared with the outline of total scores possible for the 12 categories. The highest and lowest scores in the study are also located on the figure. The basic configuration of levels for the complete scales comes through in cell profiles, but there are also differences among the profiles themselves.

The tally of highs and lows for indexed scores is as follows:

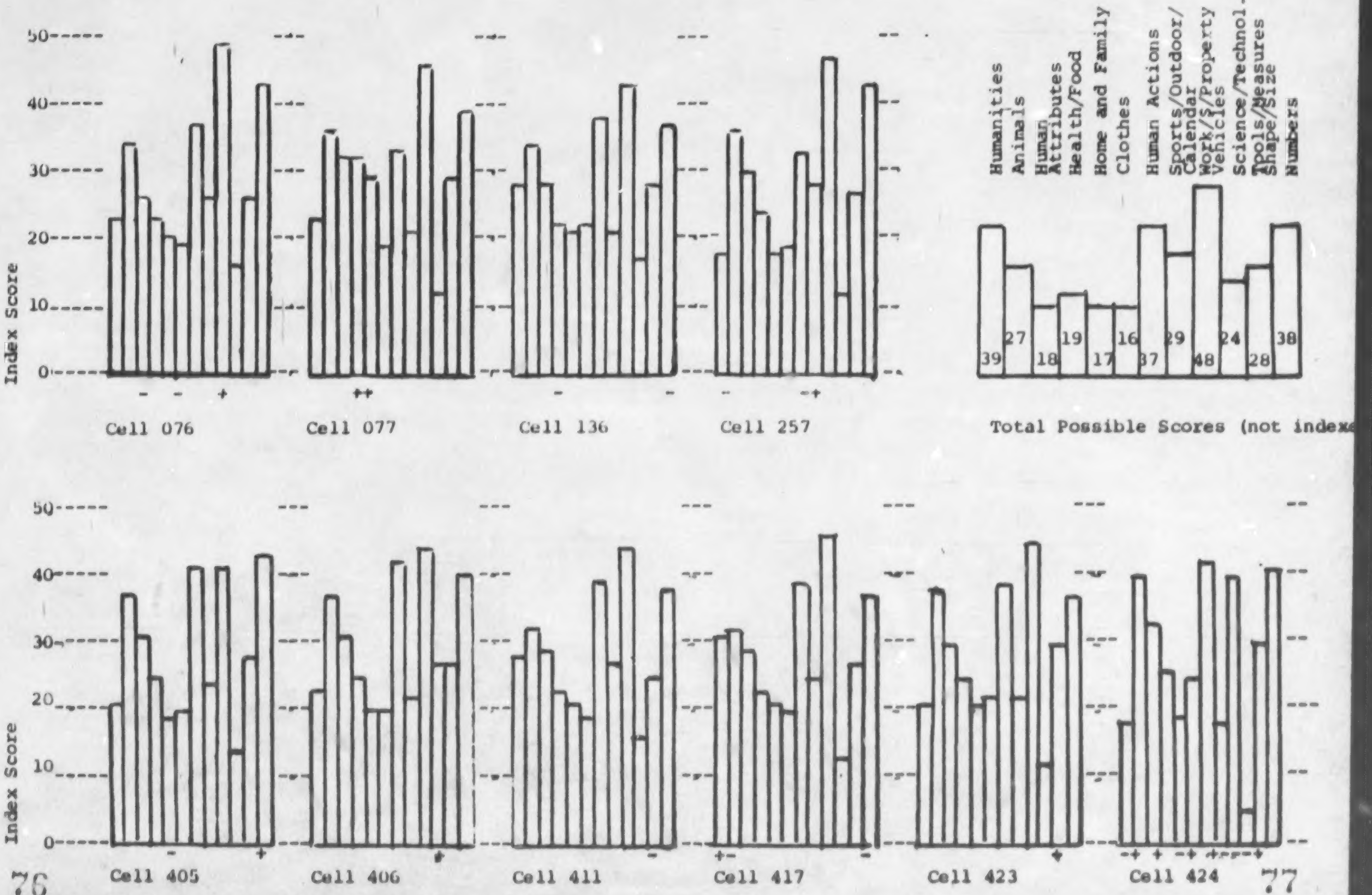
Table 24. Mean scores and percentages of total possible scores for the Correct Information Categories, by Cells

Cell Number	Cell N	Humanities		Animals		Human Attributes		Health/ Food		Home and Family		Clothes		Human Actions		Sports/ Outdoor/ Calendar		Work/Money Property Vehicles		Science/ Technology		Tools/ Measures/ Size/Shape		Numbers		Wrong Answers		Items not Given		Total Score	
		M	%	M	%	M	%	M	%	M	%	M	%	M	%	M	%	M	%	M	%	M	%	M	%	M	%	M	%	M	%
076	10	13	33	19	69	15	81	13	68	11	65	10	65	20	55	14	50	27	56	9	38	15	52	23	61	35	18	47	24	189	56
077	8	12	31	18	67	17	92	16	85	11	65	10	59	17	46	11	36	24	49	6	25	15	53	19	51	28	14	41	21	174	51
136	7	16	40	19	70	16	87	12	63	12	71	12	75	21	57	12	40	24	50	11	44	15	54	21	54	35	18	46	23	189	56
257	7	9	23	18	67	15	85	12	63	10	59	11	66	17	45	14	49	24	50	6	25	14	50	22	58	37	19	58	29	172	51
405	12	9	22	15	56	13	71	10	54	8	45	8	52	17	45	10	34	17	35	6	24	12	41	18	46	26	13	83	42	139	41
406	12	10	27	17	63	14	79	11	59	9	55	9	59	19	52	10	35	20	42	6	24	12	44	18	48	37	19	67	34	158	46
411	12	15	39	18	66	16	88	13	67	11	67	10	65	21	57	15	50	24	51	9	37	14	49	21	55	36	18	49	25	187	55
417	8	17	44	18	66	16	89	13	68	12	68	11	71	22	58	14	49	26	53	7	30	15	55	21	54	34	17	46	23	191	56
423	7	10	26	19	69	15	83	12	65	10	59	11	66	19	52	11	42	22	46	6	23	15	53	18	48	31	16	64	30	168	49
424	7	7	18	16	58	13	72	10	53	7	44	10	60	16	44	7	24	16	33	2	8	12	42	16	42	35	18	87	44	131	39
Total Score Possible		39		27		18		19		17		16		37		29		48		24		28		38		340		197		340	

Table 25. Mean indexed scores for the Correct Information Categories, by Cells

Cell number	Cell N	Humanities	Animals	Human Attribute	Health/ Food	Home and Family	Clothes	Human Actions	Sports Outdoor Calendar	Work/Money Property Vehicles	Science/ Technology	Tools Measures Shape/Size	Numbers	Percent Correct	INDEX
076	10	22.7	34.2	26.1	23.1	19.7	18.6	36.5	25.8	48.5	16.1	26.0	41.2	56	1.79
077	8	23.3	35.5	32.3	31.6	27.8	18.6	33.1	20.6	46.1	11.8	29.2	37.8	51	1.96
136	7	27.9	33.8	27.9	21.5	21.3	21.5	37.6	20.8	43.0	19.0	27.6	36.9	56	1.79
257	7	17.8	35.5	30.0	23.5	19.6	20.8	32.7	27.6	47.2	11.6	27.2	43.3	51	1.96
405	12	21.0	36.8	31.2	25.1	18.5	20.3	41.0	23.9	41.0	14.2	28.3	42.7	41	2.22
406	12	22.6	36.9	31.0	24.5	20.4	20.4	41.7	21.9	43.6	27.4	26.7	39.9	46	2.17
411	12	27.5	32.4	28.8	23.1	20.6	18.9	38.6	26.6	44.2	16.0	24.9	38.0	55	1.82
417	8	30.6	31.9	28.8	23.1	20.8	20.4	38.5	25.2	45.7	12.7	27.4	36.9	56	1.79
423	7	21.0	38.2	30.4	25.3	20.6	21.6	39.4	22.2	44.9	12.0	30.0	37.3	49	2.04
424	7	17.9	40.2	33.3	25.6	18.9	24.6	42.0	17.7	39.9	4.9	30.0	41.0	39	2.56

Figure 11. Correct Knowledge Profiles for average cases in Learning Space Cells with more than six cases.



Cell number	Highest category score found in the study	Lowest category score found in the study
076	Work/Money Vehicles	Human attributes/Clothes
077	Health/Food/Home and Family	Clothes
136	None	Health/Food/Number
257	Sports/Outdoor/Calendar	Humanities/Human Actions
405	Number	Home and Family
406	Science/Technology	None
411	None	Tools/Measures/Size/Shape
417	Humanities	Animals/Numbers
423	Tools/Measures/Size/Shape	None
424	Animals Human Attributes/Human Actions Clothes	Humanities Home and Family Sports/Outdoor/Calendar Work/Money/Vehicles/Property Science/Technology

CONCLUSIONS:

While this pilot study does not establish any findings, there are indications that "learning space" configurations are related to the knowledge students display in test responses and the level of abstractness at which they function. Students in some configurations seemed, also, to guess less often, suggesting a confidence factor. After indexing to equalize levels of abstractness, highest and lowest category scores, when found together, seemed to split often between object-oriented and people-oriented categories; e.g., "high" Number and "low" Home and Family in Cell 405. For this population of students with school problems, Humanities were low in all profiles, and Science was low in most, reflecting lack of advanced concepts. Finally, there seemed to be quite different profiles for middle N. European boys with fathers in Technology Sex-type I occupations as compared to Sex-type II.

The number of cells with enough cases to make comparisons is not large, and cases are split between WISC and WAIS inventories. Other approaches to the study of knowledge profiles can be made, however, using variables singly or in combination to determine base rates for cultural transmission effects. This pilot study shows enough promise to warrant further work. Therefore, the remaining cases in our files will be scored for computer assisted validation studies beyond the termination of the present project.

SECTION V
CULTURAL THEMES

The portion of the year's work described in this section relates to classification of finished case studies according to syndromes. The "authoritarian" or "aggressive boy" syndrome described by Adorno (1950) is well known to persons in the social learning field. It appears that background configurations, learning dynamics, and cognitive and behavioral effects of other frequently encountered patterns can be identified in a similar way. In fact, our observations often show that the best explanation for chronic problems that persist or even escalate, despite years of treatment, is that, in some unrecognized way, the treatment replicates the forces that create the problem so that the problem itself is reinforced rather than corrected.

For example, one could take the case of a student whose dominant parent is alcoholic, a glib contact salesman, a lawyer who successfully manipulates and confuses witnesses, or a person engaged in some other type of communication activity that is guaranteed to disrupt thought patterns and distort the meaning of words. One would expect the student to be anxious and error-prone in verbal situations, and though he or she might seem fluent, there would be a low recall vocabulary score and inarticulate expression of ideas due to lack of "straight" feedback when learning took place. One would also find that, if the student were not overwhelmed, he or she would have developed compensatory ways of stabilizing his or her mental world. These would include well-developed visual observation, use of abstract class concepts to cope with divergent and tangential feedback, and simplistic, rule-bound reasoning which might be adhered to so stubbornly in complex situations that perseveration would be observed. Without a holistic study of "learning space" factors, traditional assessments would locate the problem within the student. The student would be said to have "brain dysfunction," "perceptual deficits," "flat affect," and, or, "serious emotional disturbances;" or perhaps even "aphasia" if he or she developed elective mutism in trying to cope.

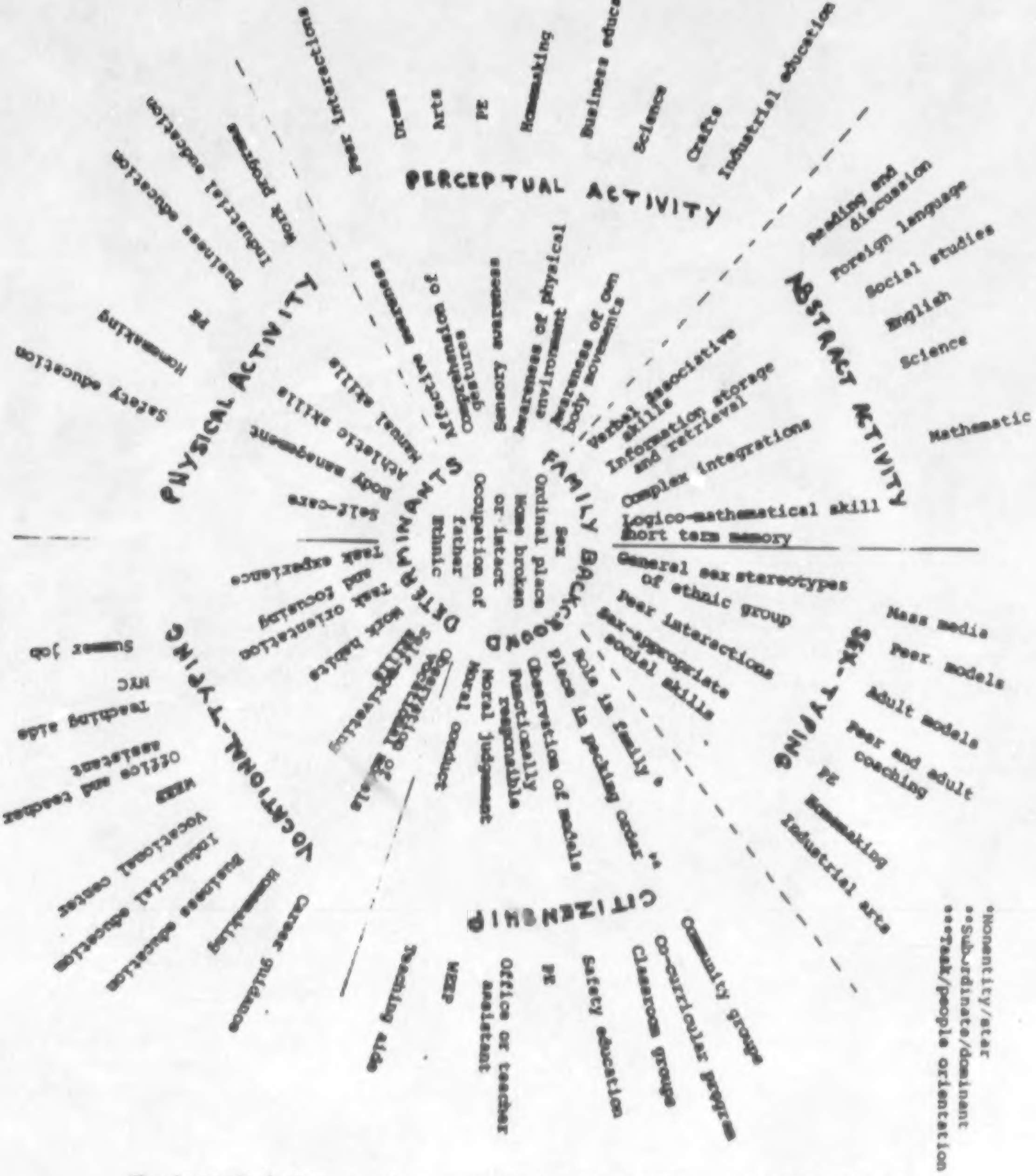
The treatment prescribed following such a damaging assessment is the real issue here. It would most certainly include some "intensive therapy" to "get the person in touch with his or her own feelings" through talk. Also, the student's ways of coping with previous disturbing encounters of this kind would most certainly be called "resistance" to therapy, leading on to greater efforts by the therapist to break down "defenses." It needs to be recognized that such treatment replicates the dynamics of the problem itself, and, therefore, the student's compensatory habits are reinforced with each "therapeutic" go-around. In other words, the "therapist" believes his or her role is to "see through" what the student is saying and to reinterpret the words in terms of hidden emotions and motivations which the student is presumed to feel. Such treatment often compounds the problem. In our experience, the attempts of a student in this situation to defend him or herself feed into a cycle of increasingly desperate struggles which, in time, "justify" the damaging diagnosis.

From our standpoint, such a case reveals one type of identifiable syndrome. Once diagnosed, it should obviously be treated through "straight" verbal feedback in a teaching relationship, reinforcing what is correctly used so as to stabilize it, and helping the student to learn semantics through description of the real world around him or her, rather than indulging in discussions of unverified "underlying feelings" which are said explain behavior. Equally important, the alternative coping methods which the student has put together should be identified as positive, though perhaps

Figure 12. Model for Assessment of Adolescent Development.

FACETS OF HUMAN DEVELOPMENT

A student's problem will be a deficit in one or more skills in a given area.


PERCEPTUAL ACTIVITY
Peer interactions
Drama
Arts
PE
Homemaking
Business education
Science
Crafts
Industrial education
Sensory awareness
Awareness of physical environment
Awareness of own body movements
Affective awareness of
Comprehension of feelings
ABSTRACT ACTIVITY
Reading and discussion
Foreign language
Social studies
English
Science
Mathematic
Verbal associative skills
Information storage and retrieval
Complex integrations
Logico-mathematical skill
Short term memory
SEX-TYPING
Mass media
Peer models
Adult models
Peer and adult coaching
PE
Homemaking
Industrial arts
General sex stereotypes of ethnic group
Peer interactions
Sex-appropriate social skills
CITIZENSHIP
Community groups
Co-curricular program
Classroom groups
Safety education
PE
Office or teacher assistant
WEEP
Teaching aide
Role in family*
Place in pecking order**
Observation of models
Functionally responsible
Moral judgement
Moral conduct
VOCATIONAL-TYPING
Career guidance
Homemaking
Business education
Industrial education
Vocational center
WEEP
Office and teacher assistant
Teaching aide
NYC
Summer job
Task experience
Task focusing and orientation
Work habits
[illegible]
[illegible]
Role of
PHYSICAL ACTIVITY
Safety education
Homemaking
PE
Business education
Industrial education
Work programs
Self-care
Body management
Athletic skills
Manual skills
DETERMINANTS
FAMILY BACKGROUND
Sex
Ordinal place
Home broken or intact
Occupation of father
Ethnic
*Nonentity/star
**Subordinate/dominant
***Task/people orientation

The 'agencies' that can give compensatory training for a particular deficit are shown in the outside ring of titles.

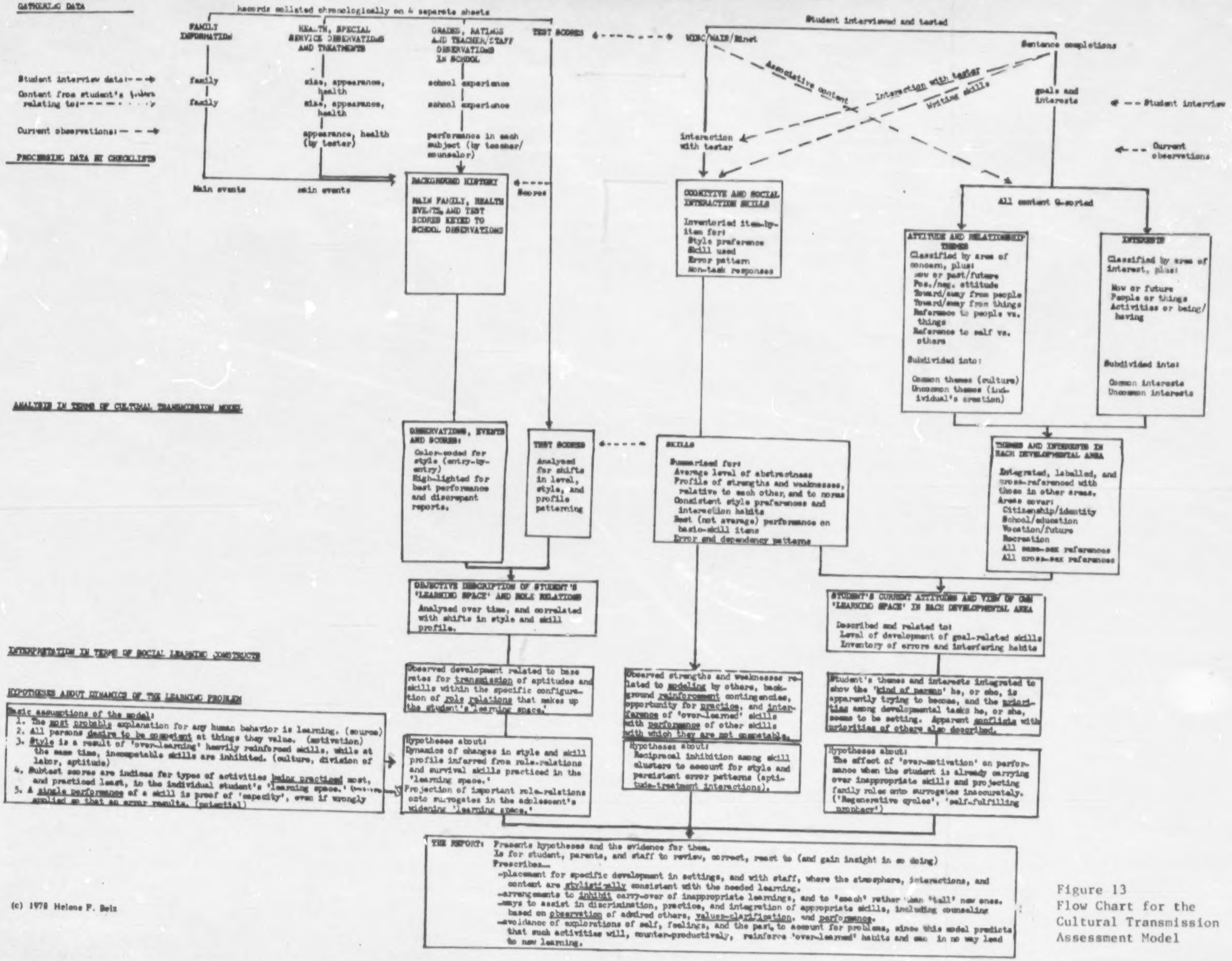
immature, steps toward integration. Intelligent use of whatever resources the child may have had should also be applauded in terms of the problem to which they were applied. From this starting point, rehabilitation can begin. A "teaching" orientation toward the problem is crucial since a family-based communication problem of this sort will not be corrected by the parent of an adolescent, particularly if, by that time, it enhances the vocational success of the family breadwinner; the child must learn to recognize its effects and cope with them, instead.

A syndrome of this sort will usually involve several of the developmental areas shown on the assessment diagram in Figure 12 on page 59 . This model, which was developed here in 1971, includes three areas of internal growth (physical, sensory/perceptual, and abstract thought); and three role-relationship areas (vocational-typing, sex-typing, and "citizenship" or dominance/dependency relations). Within each facet on the diagram, developmental processes are arranged in a spectrum which goes from intake of learning to practice of skills. An adequate case study for an adolescent in trouble systematically reviews them all. The outside ring shows the types of school settings which are designed to enhance developmental processes in each facet.

The materials to be assembled, the instruments needed, and the steps for handling the case study data are diagramed in the flow chart in Figure 13. The work of the past year to define "learning spaces" and develop assessment checklists has already been described. We now turn to the identification of syndromes. These are "mosaics"of cultural themes to which the skills and knowledge assessed by the various checklists apply.

This work has proceeded from both ends, so to speak. That is, we can classify cultural themes in raw data, and we have also identified sets of themes in finished case studies. The data in which themes are found include interviews, sentence completions and test responses, and descriptions of behavior in a range of settings which may include the home, an array of classes, professional visits, testing, disciplinary settings, etc., using whatever material we can obtain. The projective content of this material is Q-sorted. With the help of a checklist for areas of "Common Teenage Concern", idiosyncratic material is separated out, and both common and unusual themes are identified. Repetitive patterns are also identified in the observational data, as well as any marked discrepancies in behavior from setting to setting. The role-relations within which given themes emerge are then identified, if possible, and materials are reviewed for any evidence of imitation of role models which the student may display.

The creation of instruments for classifying cultural themes, prior to this project, is covered briefly in this section of the report. Following that, this year's work of defining themes in the case studies in our files is described. A previously developed framework for showing the transmission, through role-relations, of cultural elements was reviewed and found adequate. After reviewing a sample of case studies, four "syndromes" were then tentatively identified, and their component themes were laid out in tables which also display conflicts among them. Obviously, this work is merely a beginning, and does not validate the assessment process. Further work will produce checklists for themes so that their correlation with both background variables and effects can be found, and the clustering of themes into recognizable syndromes can be described.


GATHERING DATA
Records collated chronologically on 4 separate sheets
FAMILY INFORMATION
HEALTH, SPECIAL SERVICE OBSERVATIONS AND TREATMENTS
GRADES, RATINGS AND TEACHER/STAFF OBSERVATIONS IN SCHOOL
TEST SCORES
Student interview data:
Content from student's ideas relating to:
Current observations:
family
family
size, appearance, health
size, appearance, health
appearance, health (by tester)
school experience
school experience
performance in each subject (by teacher/counselor)
Main events
main events
Scores
Student interviewed and tested
WISC/WAIS/Binet
Sentence completions
Associative content
Interaction with tester
Writing skills
goals and interests
Student interview
interaction with tester
Current observations
All content Q-sorted
PROCESSING DATA BY CHECKLISTS
ANALYSIS IN TERMS OF CULTURAL TRANSMISSION MODEL
INTERPRETATION IN TERMS OF SOCIAL LEARNING CONSTRUCTS
HYPOTHESES ABOUT DYNAMICS OF THE LEARNING PROBLEM

BACKGROUND HISTORY

MAIN FAMILY, HEALTH EVENTS, AND TEST SCORES KEYED TO SCHOOL OBSERVATIONS

COGNITIVE AND SOCIAL INTERACTION SKILLS

Inventoried item-by-item for:
Style preference
Skill used
Error pattern
Non-task responses

ATTITUDE AND RELATIONSHIP THEMES

Classified by area of concern, plus:
Now or past/future
Pos./neg. attitude
Toward/away from people
Toward/away from things
Reference to people vs. things
Reference to self vs. others

Subdivided into:

Common themes (culture)
Uncommon themes (individual's creation)

INTERESTS

Classified by area of interest, plus:

Now or future
People or things
Activities or being/having

Subdivided into:

Common interests
Uncommon interests

OBSERVATIONS, EVENTS AND SCORES:

Color-coded for style (entry-by-entry)
High-lighted for best performance and discrepant reports.

TEST SCORES

Analysed for shifts in level, style, and profile patterning

SKILLS

Summarized for:
Average level of abstractness
Profile of strengths and weaknesses, relative to each other, and to norms
Consistent style preferences and interaction habits
Best (not average) performance on basic-skill items
Error and dependency patterns

THEMES AND INTERESTS IN EACH DEVELOPMENTAL AREA

Integrated, labelled, and cross-referenced with those in other areas.
Areas cover:
Citizenship/identity
School/education
Vocation/future
Recreation
All same-sex references
All cross-sex references

OBJECTIVE DESCRIPTION OF STUDENT'S 'LEARNING SPACE' AND ROLE RELATIONS

Analysed over time, and correlated with shifts in style and skill profile.

STUDENT'S CURRENT ATTITUDES AND VIEW OF OWN 'LEARNING SPACE' IN EACH DEVELOPMENTAL AREA

Described and related to:
Level of development of goal-related skills
Inventory of errors and interfering habits

Basic assumptions of the model:
1. The most probable explanation for any human behavior is learning. (source)
2. All persons desire to be competent at things they value. (motivation)
3. Style is a result of 'over-learning' heavily reinforced skills, while at the same time, incompatable skills are inhibited. (culture, division of labor, aptitude)
4. Subtest scores are indices for types of activities being practiced most, and practiced least, in the individual student's 'learning space.'
5. A single performance of a skill is proof of 'capacity', even if wrongly applied so that an error results. (potential)

Observed development related to base rates for transmission of aptitudes and skills within the specific configuration of role relations that makes up the student's 'learning space.'

Hypotheses about:
Dynamics of changes in style and skill profile inferred from role-relations and survival skills practiced in the 'learning space.'
Projection of important role-relations onto surrogates in the adolescent's widening 'learning space.'

Observed strengths and weaknesses related to modeling by others, background reinforcement contingencies, opportunity for practice, and interference of 'over-learned' skills with performance of other skills with which they are not compatable.

Hypotheses about:
Reciprocal inhibition among skill clusters to account for style and persistent error patterns (aptitude-treatment interactions).

Student's themes and interests integrated to show the 'kind of person' he, or she, is apparently trying to become, and the priorities among developmental tasks he, or she, seems to be setting. Apparent conflicts with priorities of others also described.

Hypotheses about:
The effect of 'over-motivation' on performance when the student is already carrying over inappropriate skills and projecting family roles onto surrogates inaccurately. ('Regenerative cycles', 'self-fulfilling prophecy')

THE REPORT: Presents hypotheses and the evidence for them.
Is for student, parents, and staff to review, correct, react to (and gain insight in so doing)
Prescribes...
-placement for specific development in settings, and with staff, where the atmosphere, interactions, and content are stylistically consistent with the needed learning.
-arrangements to inhibit carry-over of inappropriate learnings, and to 'coach' rather than 'tell' new ones.
-ways to assist in discrimination, practice, and integration of appropriate skills, including counseling based on observation of admired others, values-clarification, and performance.
-avoidance of explorations of self, feelings, and the past, to account for problems, since this model predicts that such activities will, counter-productively, reinforce 'over-learned' habits and can in no way lead to new learning.

(c) 1978 Helene F. Belz

Figure 13
Flow Chart for the
Cultural Transmission
Assessment Model

PREVIOUS WORK ON CULTURAL THEME CHECKLISTS:

The first checklist, which we have been using for several years, was derived from protocols for sentence completions obtained during testing. Material from 100 protocols, with 50 responses each, was classified as to content and frequency. All response items which occurred 30 times or more were selected for the checklist, and called "Common Teenage Concerns." Items that were very similar were clustered together (e.g., "go to bed""sleep""go back to sleep"). These clusters were then grouped under 1) Recreation, 2) Future, 3) Feelings, 4) Family, and 5) Other Relationships. The final checklist is shown as Figure 14 on the next page.

Users of the checklist must learn to pay attention only to the response when scoring, and not to the sentence stem. For example, the ending "drink" for the item "My mother doesn't..." would be scored under "Food/drink", and not "Mother." Items addressed to "you" and references to self as "i" are also noted. When the checklist is complete, it will be found that the student's projective themes have been sorted by content, and that each resulting cluster provides information on those aspects of the "learning space" to which the student relates that theme. E.g., the "Get angry/fights" cluster might be related to "My mother doesn't..." "My brother..." "I hate..." "What makes me sad is..." etc..

There are always other responses not covered by the list. These are Q-sorted by content themes, making additional clusters which are atypical in terms of the cases we deal with. These are carefully studied for their special implications. The total percentage of "common" responses nearly always ranges from 45 to 80 percent, and shows the degree to which a student is oriented toward, or away from, the concerns of his or her peers.

Marked differences in the patterning of responses are found from case to case. Scores for three of the cases for whom syndromes will later be described are shown on the sample checklist in Figure 14. For Case #2, who illustrates a "helpless/handicapped boy" syndrome, and whose case study will be found in Appendix E, the description of "common" themes would be as follows:

> ____ gave a high percentage of common teenage concerns (72%). His largest category was Family, clustering mainly on siblings, "me" and food. Next came Other Relationships, which clustered on boy-girl relationships and people. There were almost as many references to Recreation, all on sports and vehicles. An equal number were in the Feeling category, referring mainly to having fun and "being good" or "others good to me." The smallest category was Future, clustering on vocations. There were also 18 percent "you" responses suggesting an inner dialogue with poorly differentiated personalities around him.

For Case #4, a girl said to show a "passive/mothering" syndrome, the description of concerns would be:

> ____ gave a very high percentage of common teenage concerns (78%), with 56 percent falling in the category of Other Relationships. These clustered heavily on people; other clusters referred to "Nothing" and "Everything." The next category was Family,

Figure 14. Checklist for Common Teenage Concerns

Responses like those frequently given by other students

CONFIDENTIAL Date

Number of Responses

Name Sample Case #

	1	2	3	4
[illegible]				
"You"		9	2	
ports/be an athlete		5		1
ar/motorcycle/bicycle		2	4	1
usic/concerts				
ovies/TV				1
ocational choice		3	1	5
inish school/college				
et good grades/do well in school				
e rich/have money				
o to some specific place		1		1
ravel/go to someplace not specified	No data	1		
ope for/ideas about/a better world				
ine/OK/cool (others or self), all right				
un/farout		4		1
ice (others or self)			3	4
e happy/lucky		1		2
onely/sad/alone				
ood to me/be good		2		
et angry/fights				
e bigger/stronger				
arents/family			2	
other		1		
rothers and sisters		3		2
yself/me		3	4	4
ood/drink		2	2	1
ome/go home/be home				
ed/sleep/go back to sleep		1		1
arriage/having kids/have a house				1
riends in general		1		
eople/specific person named		3	1	7
o one/nothing/nowhere				2
y or girl friend				
irls/like or love girls		1		1
y-girl relationships		2		1
it		1	2	
thers think I'm crazy, a fool, an ass, weird		1	3	
nimals enjoyed/ injured/feared				
verything/lots of things/anything			2	4
Totals		36/50	24/50	39/50
%		72	48	78

c) Helene F. Belz, 1971

clustering on "me" and siblings. Feeling was next with clusters on "nice" and being happy. Future was next with a sizeable cluster on vocations, but there were only scattered references to Recreation, which was the smallest category.

The Common Teenage Concern checklist has been extremely helpful in balancing and correcting the psychologist's perception of the individual student's world; and the open Q-sort for less common themes provides further insight into what is unique in the student's situation. These methods also insure that all data are used in the assessment, preventing selection of material to fit preconceived ideas of the psychologist.

After our success with this checklist, it was decided that an accurate and comprehensive model for classifying cultural themes was absolutely essential in the assessment of the complex problems of adolescents. Returning to the original sample of raw data from sentence completions, the content of all responses, both right and wrong, from 100 WISC and 85 WAIS protocols was tabulated in the same detailed way, frequencies were obtained, and the material was added to the initial body of data.

The themes found in a sample of finished case studies were also catalogued. After 26 cases, it was evident that the range of themes to be found in the cases in our files had largely been covered, and were only being duplicated. The finished themes and the raw data were then brought together to create a catalog which was indexed in terms of the following dimensions: 1) Area, 2) clusters within an Area, 3) positive versus negative attitudes, 4) immediate versus other time or place, 5) internal focus versus focus on environment, and 6) focus on things versus focus on people. Items with a frequency of five percent or less were then removed, leaving the list of which a sample page is shown in Figure 15 on page 65. Items with very high frequencies, including those which turned up on the Correct Information Inventory described in the last section, are earmarked for special treatment. They will either be removed entirely from the theme catalog, or they will receive special weights since it is felt that high frequency responses may not reflect "free" projections, but are "directed" to some degree. It also seems that profiles derived from the high frequency items may indicate interests more than cultural background themes.

Further work on the theme catalog was then postponed until ways to display the patterning of themes in final case studies had been developed. Correlational studies of the themes and the validation of syndromes can then begin. Included in Appendix E is a model for displaying the role relations in a case study, and their effects. This was developed for presentation of cultural assessment methods to the entire administrative staff of our District in 1972. Twelve sample case studies were outlined under this format. They included one boy and one girl with problems relating to each of the six developmental facets diagrammed in Figure 12 on page 59. This unpublished syllabus (Belz, 1972) was reviewed by the project anthropologist and will be retained as a model. Going beyond this outline, this year's work was to describe, in detail, the themes in the four cases which seemed best to represent syndromes. This work is described below.

FIGURE 15. Sample Page of Theme Catalog

THEMES: Positive	Number	Other time/ Place*
Internal People:		
want to do better in school		
want to learn		
get a good education		
when play games, play fair		
be good		
be nice		
try to obey, do right		
like to work hard		
Internal Things:		
like school		
like homework		
External People:		
teachers are nice		
teachers are OK		
others are good		
others help me		
help others		
others think I'm nice		
External Things:		
reading is good for you		

THEMES; Negative	Number	Other time/ place*
Internal People:		
I need help		
I'm bad		
I get in trouble		
I hate authority		
want to cut school		
I hate teachers		
Internal Things:		
want to leave school		
hate school		
want to cut school		
worry most about school		
External People:		
kids are bad		
kids need to be controlled		
others think I'm bad		
teachers are mean		
teachers are stupid		
External Things:		
school makes me sad/mad		
school is boring		
school is stupid/ unnecessary		

Others:

Others:

* P = Past
F = Future
O = Other Place

AREA: Home and School Moral Values

CLUSTER School

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METHOD:

The project file for cases whose names began with "A" was studied. It was found that this file contained:

1. Cases with referrals but no tests, for whom information is incomplete.

2. Students from the years 1966-1970 who had referrals and tests, but for whom the only other data recorded were usually sex and bilingualism.

3. Case reviews based on folder data, where no test was given.

4. Case studies with tests and psychological reports, but no collations of background data or Q-sorts of themes.

5. Complete psycho-educational studies with tests and collations.

The cases in Group 5 were taken for analysis, while the rest were set aside in the hope of adding data from other sources. For the cases selected, the first step was to record case numbers on the materials and delete names. Next, to test the usefulness of the case study framework shown in Appendix E, similar outlines were made for each case. This step made use of the following case study data:

Referral reason

Previous medical and psycho/educational diagnoses

Projective themes that were identified, and their relation to background

Skills being practiced or not practiced, as indicated by the test profile

Correct knowledge displayed

The student's cognitive style as shown in the test profile

Next, the structure of role-relations and role conflicts was diagrammed, and hypotheses as to their effect on cognitive and social functioning were set up. Those outlines with similar configurations were then grouped as syndromes for further study.

RESULTS:

Four syndromes were identified and are shown in Tables 28 through 31. The rows going across the tables show 1) the problems which finally brought referral, 2) clusters of specific themes which the student has expressed through testing, interviews and observed behavior, 3) their probable background sources and 4) effects which seem related. The themes are described in the student's words, or are abstracted from them, or they reflect behavior repeatedly observed. They are identified by Area and Cluster from the theme catalog, and positive or negative "valence" is shown. The most probable background source for each theme is identified from the collated records, relying on evidence of imitative responses, contiguity of events, and discrepancies among observations made in different role-relations and settings. The apparent effect of each theme on the student's attitudes, expectations, and performance is then defined, again relying on relevant details from reports in the collated record.

On the vertical dimension, the theme clusters were arranged in conflicting pairs. The last column shows the treatments prescribed. The "conflicts" are treated as developmental problems which must first be defined and then dealt with by a teaching rather than a feeling-oriented "conflict-resolution" model. So, in the list of prescriptions for each case, the student's deficits

Table 26. "Masculinized/Aggressive Girl" Syndrome

Case #1

Reason(s) for Referral	Theme Cluster (Role Relation)	Areas/Clusters	Background Data	The Problem	Recommended Treatment
Aggression toward peers and teachers	Be a queen; get what I want; get mad when hurt	Pecking Order/ Dominate (+) and Invulnerable (+)	Girl is third of four girls. Oldest sister said to be a kleptomaniac, and has been in EMR classes. Girl has learned to fight back against older sibs. Mother tolerates this aggression.	Girl attempts to coerce peers verbally and physically. Behaves erratically, almost manically at times. Normal neurologically except for slight EEG dysrhythmia. Had convulsions before entered 1st grade. Has been on dexadrine therapy.	Review home situation with girl, help her to understand it as learned behavior, inappropriate at school. Create alternative environment at school. Continue dexadrine therapy to control convulsions.
	VERSUS				
	I don't play games; afraid to fight; other people hurt me; cry when hurt	Pecking Order/ Submit (-) and Vulnerable (-)	Mother has actively encouraged aggression toward girl from mother's "favorites" among girl's sibs. Oldest sister has picked on girl.	"Passive watcher" behavior. Girl is overwhelmed by dominant sibs and mother.	Will need help in verbal classes. Do not involve mother in school discipline.
	Like friends; other people think I'm OK	Being Together/ Close to Others (+)	Girl's social skills are good in structured classes (art, P.E.). Family is Mexican; evidence of bilingual interference in verbal problems.	Social skills are very poor in people-oriented classes (social studies). She is so people-oriented that she confuses acts and persons; almost ignores the physical environment.	Training should be done via physical contact, coaching, and demonstration.
	VERSUS				
	Be alone; afraid to be alone; sorry for self	Being Together/ Separate from Others (-)	Girl has been over-stimulated by constant upheavals at home, and sib's aggressive behavior.	Girl responds to pressure with panic and anxiety. Has improved, except in math, since father returned from hospital.	Needs training in logical thinking as basis for emotional stability.
	Mother doesn't hate me; girls are nice; be pretty for boyfriend	Sex Roles: Female Socialization/ Own Sex (+)	Family is from rural Mexico; strong emphasis on female attractiveness for men, and on external focus. Mother is housewife "and a mother", 6th grade education.	Dependent and passive with men. Girl has not been able to develop structured thinking habits. Constantly needs others to frame tasks for her.	Talk with counselors and teachers to develop abstract thought. Needs simple exercises in classification.
	VERSUS				
	Like sports; like outdoors; sisters make me mad; jealous of girls; was ill in home ec.	Sex Roles: Female Socialization/ Own Sex (-)	Father a truck driver. Girl seems to have modeled his masculine interests. Mother is very dominant at home.	Girl's "masculinized" interests conflict with traditional Hispanic expectations of women. Social skills good except when in female-dominated situation.	Girl needs to discuss appropriate sex role for herself, build up an ideal image she can develop in to.
	Father isn't bad; like boys	Sex Roles: Female Socialization/ Cross-Sex (+)	Traditional views of men as dominant(see above).	See below.	See below.
	VERSUS				
	I hate "man"; boys make me sad; scared to be with boys by myself	Sex Roles: Female Socialization/ Cross-Sex (-)	Girl may be following mother's pattern of unusual fear of normally dominant men. Father was in hospital with "nervous breakdown", family very upset.	Girl appears to be afraid of male disruptive behavior; she seems to think men are likely to "erupt" as her father did.	Needs male teachers to help her develop discipline, but in a quiet, calm manner. Needs help from male teachers in math, preferably in a programmed format.

Table 27. "Helpless/Handicapped Boy" Syndrome

Case #2

Reason(s) for Referral	Theme Cluster (Role-Relation)	Areas/Clusters	Background Data	The Problem	Recommended Treatment
Very poor work habits and skills	Be a teacher aid; get a job; like to read	Work & School Vocational Achievement/no cluster title	1st step-father was in sales. Mother has 12th grade education. People-oriented and upwardly mobile.	Boy has modeled people-oriented vocations from 1st step-father, but mother is in electronics, a high-structure field.	His motivation in shop and art is very high. Continue these to allow him to achieve and improve.
	VERSUS				
	Future is vague, a blank; want to be smarter	Work & School Vocational Achievement/no cluster title (-)	Boy has been in EMR since 5th grade, EH since 6th. 1st step-father only had 8th grade education.	Boy has had to keep behavior and skills at extremely low level at home; this carries over into school situation.	Boy needs vocational counseling from school to help him get work he wants to do.
	Be good boy; family is good; others think I'm good	Home & School Moral Values/Home (+)	Family is Jehovah's Witnesses. Boy tries hard in school. Strong emphasis on "goodness".	Over-emphasis on "goodness"; boy is left with superficial social skills. Implies "badness" when he fails.	Review with counselor meanings of "good" and "bad", so he can gain a wider associative field, and appropriate standards.
	VERSUS				
Poor dress and appearance	I'm messy; I hate "you"; leave if I don't get what I want	Home & School Moral Values/Home (-)	Mother thinks boy is neurologically damaged; tests do not agree. Mother reports temper tantrums and violence at home; boy does not display this at school.	Mother's view of boy as "handicapped" allows boy to perform poorly, dress poorly, form sloppy work habits. Boy is confused about expectations of his behavior.	Do not involve mother in boy's discipline. Let him know test results show he is normal. Help him develop his own goals for performance
	Like others; other people have fun; like to play	Being Together/Close to Others (+)	Boy functions well with younger children at school. He is the oldest living at homo of five boys.	Boy works better with younger children than with peers or adults.	Boy is learning to handle himself in shop and art classes with peers. Do not let teachers protect him.
	VERSUS				
	Afraid to be alone; afraid of abandonment	Being Together/Separate from Others (-)	Boy is slow, awkward, obese. Peers in school ridicule him. Father died before boy's birth.	Boy is afraid of being left alone by people, but does not know how to reach out.	see above
	Like to fix things; like to play with brothers; like sports	Sex Roles: Male Socialization/Own Sex (+)	2nd step-father was mechanic. Boy modeled his masculine interests and behavior.	Interests are at odds with skills (verbal is best area). Boy is aware of detail in physical environment, but can't form Gestalts.	Continue work in shop class. Needs help in reading, which he enjoys. Need procedures for more rapid intake of larger units of information.
	VERSUS				
	Brothers are mean to me; Fathers leave, are unreliable; brothers make me mad	Sex Roles: Male Socialization/Own Sex (-)	Mother infantilizes boy, lets younger brothers taunt him for his "failures". Father died before boy was born.	Boy has extremely poor organization and logic skills. Needs tester to frame tasks for him. Negative male model.	Needs to talk with male counselor about his self-image. Needs help from male teachers to teach him discipline.
	Think about girls; girls and boys play together	Sex Roles: Male Socialization/Cross-Sex (+)	Boy has been overprotected by mother, as she admits. Home was very disrupted after father's death.	Boy has unrealistic view of women and girls; his idea of male-female relations remains at infantile level.	Review male-female relations with counselor. Boy needs a chance to see adult men and women interact successfully.
	VERSUS				
	Refers to Mother as "her"; "sister" is a big mean	Sex Roles: Male Socialization/Cross-Sex (-)	Mother has better education than husbands, dominates children.	Boy reacts angrily to Mother's attempts to control him. Does opposite of instructions.	see above.

Case #3

Table 28. "Authoritarian/Aggressive Boy" Syndrome

Reason(s) for Referral	Theme Cluster (Role-Relation)	Areas/Clusters	Background Data	The Problem	Recommended Treatment
Aggressive behavior toward peers and teachers	Seeks dominant role through fighting	Pecking Order/I dominate (+) and Invulnerable (+)	Father is distant, powerful, and authoritarian, models male privilege ideal; boy identifies with him. Boy is oldest of two males.	Boy attempts to coerce others physically and verbally. Little sense of responsibility for his actions.	Review model of male behavior with counselor. Create alternative environment at school. Reinforce only what accords with boy's own goals.
	VERSUS				
	Feel small; I'm nothing; afraid to fight back	Pecking Order/I submit (-) and Vulnerable	Boy is physically small, subject to father's discipline. Aggression toward higher-status persons is not tolerated.	"Passive watcher"--focus is on actions, not content. Boy feels overwhelmed by dominant father.	Will need help in verbal classes. Teachers should not use verbal enforcements to guide boy's development.
	Be "nice"; other people are "nice".	Home & School Moral Values/Home (+)	Explosiveness of males in family is being contained by mother's calm manners, ideal of "niceness".	Boy has very limited social skills, is frustrated in his attempts to be socially acceptable	Talk with counselors about peers to improve verbals skills and enlarge associative field.
	VERSUS				
	I get in trouble; worry most about family; I hate "you"; I like to get stoned.	Home & School Moral Values/Home (-)	Boy is shamed by both parents when he cannot win battles with father; he reacts with reckless acts and hypersensitivity.	Boy is using dramatic displays to control parents and teachers.	Set realistic goals for achievement and rewards. Short-term goals and progress-monitoring to recognize own gains.
	Women take care of men and boys	Sex Roles: Male Socialization/ Cross-Sex (+)	Mother orders boy's activities within the home, Father values her as care-taker.	Boy expects female teachers to give in to his demands and to "soothe" him, and protect him from others, especially men.	Discuss workable male-female roles and relationships with counselor; review patterns.
	VERSUS				
	Women are inferior, unimportant	Sex Roles: Male Socialization/ Cross-Sex (-)	Mother's status as a female is inferior to men in the home; females are thought to be "weak".	Boy lacks respect for all females, including teachers and school staff.	
Very poor skills and work habits	Want to be smarter	Home & School Moral Values/School (+)	Boy has vague goals of academic achievement.	Boy receives only intermittent reinforcement for his gains.	Review class situations for best ones in terms of boy's functioning.
	VERSUS				
	Feel stupid; want to cut school; school is a drag	Home & School Moral Values/School (-)	Parents have less than high school education, may be anti-intellectual.	Boy can't live up to academic goals, tries to escape achievement situations. No real basis for achievement.	

Case #4

Table 29. "Mothering/Passive Girl" Syndrome

Reason(s) for Referral	Theme Cluster (Role-Relation)	Areas/Clusters	Background Data	The Problem	Recommended Treatment
Poor attendance	Seeks dominant role through advice-giving	Being Together/ Close to Others (+)	Girl's mother has given up responsibility at home. Girl is oldest living at home, and cares for younger sibs. (Oldest daughter is with father).	Girl has good practical knowledge of immdeiate environment, but at superficial level. Interacts directly with her environment.	Place in childcare and homemaking classes, as girl has requested.
	VERSUS				
	Withdraw; get away; be independent	Being Together/ Separate from Others (-)	Mother's excuses for girl's absences are vague. Girl may be modeling father's pattern of withdrawal.	Girl has poor relations with peers. She has formed a peer relationship with her mother (an adult), instead.	Catalog girl's own interests and strengths. Place in smaller classes as girl has requested.
	Be nice; be kind; others are "sweet"; family is kind	Home & School Moral Values/Home (+)	Mother models "niceness" as means of controlling other people, who are shamed by being called "mean" if they do not cooperate.	Very superficial social relationships with teachers and counselors. Girl does not have adequate social skills.	Vocational or adult education, where girl can learn from competent adults.
	VERSUS				
	Want to leave home; others are "mean"	Home & School Moral Values/Home (-)	Girl has run away three times. Mother maintains control by threatening to go to mental hospital if children "desert" her. Mother has attempted suicide.	Girl's attempts at independence are frustrated by mother.	Do not involve mother in girl's discipline, or probe for "emotional problems".
Very poor skills	I'm helpless; girls are "sweet"; try to help Mother.	Sex Roles: Female Socialization/ Own Sex (+)	Mother has 8th grade education, has always been a housewife. Models sweet, helpless ideal of Southern femininity (family is from South Carolina).	Girl has very poor performance in logical, structured thinking. Ceiling on ideas, which remain at childish level. Very poor math skills and abstract abilities.	Rote learning of mathematics and logical skills. Girl has performed well at clerical tasks.
	VERSUS				
	Women and girls are dumb	Sex Roles: Female Socialization/ Own Sex (-)	Mother forces others, especially men, to take over in areas of logic and planning, allowing them to feel competent. She is very disorganized, girl has learned this model well. Family on Welfare.	Girl does not understand explicit directions, especially when given by female teachers; they, however, feel she is "smarter than she lets on".	Rote training in verbal skills. Male teachers in adult education, such as junior college classes, highly recommended. In this setting, male teachers can give badly needed firm direction.
	Love father; "beautiful fantasies" about him	Sex Roles: Female Socialization/ Cross-Sex (+)	Mother has told stories about father to girl; he is seen as romantic but unobtainable. Girl's attendance at school improved with male social worker. Father left when girl was very small. Three stepfathers since then.	Unrealistic expectations of male authority figures. Plays "helpless little girl" with male teachers, although comes to class better prepared for them than for female teachers.	Review with counselor her "feminine" behavior, so she can see it as a cultural pattern which is inappropriate in the school and vocational setting.
	VERSUS				
	Fathers leave, are unreliable	Sex Roles: Female Socialization/ Cross-Sex (-)			

in cognitive and social skill areas have been specified in detail. Each prescription then includes:

> Arrangements where unwanted behavior can be recognized and avoided.
>
> Arrangements to deal with deficits in learning directly by modeling, practice and coaching.
>
> Counseling to clarify, in positive terms, the kind of person the youth is trying to become, and to assist in an externally-oriented search for models for the youth to describe and emulate.
>
> Monitoring on-going behavior to reinforce integrative efforts and evidence of coping with the "learning space" problem.

A review of the tables will show that each case presents a different "mosaic" of themes. A syndrome includes both themes and the learning environment which supports them, as well as their current effects. It thus reflects interacting themes which seem to exert simultaneous influences to create a problem. However, it is a construct, and hence, not all cases so designated will show all its aspects.

It is apparent from the tables that there is conflict between Areas of the students' learning spaces, and also conflict between positive and negative themes within single clusters. The most frequent conflict was between home values and vocational themes, and between sex-typed and vocational themes. On the other hand, conflicts are shown in Case #3, for example, between the positive and negative themes in both Pecking Order clusters.

It is expected that relationships between background configurations, as represented by "learning space" cells, and syndromes will be found. This outcome is foreshadowed to some degree by elements which make up the syndrome itself. For example, the "Authoritarian" or "aggressive youth" syndrome in Case #3 is illustrated here by an oldest boy. However, it appears that ordinal place is not usually a factor, but that the student is usually male, and so few cells for females would be involved. On the other hand, in the "mothering/passive" girl syndrome in Case #4, ordinal place is directly involved.

It should also be noted that we find evidence of inhibiting effects of some types of skills upon the learning and, or, expression of other skills. Such evidence of incompatable types of behaving and problem-solving goes back to extensive observation of test responses of the District's "gifted" students prior to 1971. There have been studies of proactive and retroactive inhibition processes in relation to transfer of learning, forgetting and learning sets since 1900 (Hilgard and Bower, 1975). If the cognitive, manual and social skills which our cultural themes seem to foster or inhibit can be delineated as we move from clinical to more objective assessment methods, it appears that a very fruitful area will have been opened up in our continuing search for the causes of disabling interferences in the learning process. Hopefully, we will see an end to the sad situation where, through failure to understand cultural influences, a student with a full range of potential capabilities is forever locked within the limited modalities which his or her particular subculture may allow.

SECTION VI

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This project is an intermediate step in on-going development of a culture-fair model for assessing the learning and behavior problems of adolescents. In this model, diagnosis is re-centered from the traditional focus on variables assumed to lie within the youth, to a focus on the youth as a person who is developing within a total "learning space." The learning space is defined as a set of interacting role-relations which includes marital and ethnic status of the parents, sex-typing of the student and other family members, the student"s ordinal place, and the father's occupation. Information, not only about the student, but also about the specific cultural and social patterns being transmitted to the student, is thus systematically sought and evaluated.

Applicable to the physiologically handicapped and non-handicapped alike, the model rests on hypotheses culled directly from long experience with testing and case histories of high school students in a large, multi-cultural school District, rather than from background literature. The hypotheses are: 1) In the absence of spcific interference due to gross physical impairment, the most probable explanation for a way of behaving is that it is learned. Cognitive styles are included. 2) Though a "growth," or "competence," motive is universal, the primary source of most human behavior is imitative. Thus, unless some more complex motivation is proved (not assumed), no meaning other than imitation of something that works for some observed model should be read into the gestures and problem behavior of a child. 3) In diagnosing a school problem, the possiblity that the child is projecting a whole set of responses learned in the context of family role-relationships onto a teacher or classroom situation which replicates the family role configurations in some way should have first priority. Moreover, it can be expected that such projection will intensify a) as the child's achievement motivation increases, b) if the child's first responses fail and the ambiguity of the teacher as a stimulus increases, or c) under probing of feelings and recall of past experience as "therapeutic" techniques.

To continue, 4) in the assessment of a skill, no more than one successful demonstration is needed to prove that the structures and faculties needed for the response are intact, and can be integrated. Failure to perform the response consistently, resulting in a low test score, shows the rate of performance, not the level of ability. A high score is diagnostic of both ability and rate of performance, and it indicates practice; but a low score is only diagnostic of the performance rate; a complete analysis of error is required for diagnosis of reasons for low performance. Such reasons are myriad. 5) The patterning of a set of subtest scores shows a profile of the skills a student is, and is not, practicing. Each subtest represents a task, and only its face validity is used in the interpretation of scores. 6) The general level of the profile as a whole is a measure of habitual attention to symbols and abstractions stored in the mind, in contrast to attention to stimuli in the immediate external environment. 7) Selective factors are at work in the growth and integration of learning. These selective "sets" stem, not only from interests and values, but also from largely unexplored inhibitions of one type of cognitive process by another with which it is not compatable (e.g., abstract thought versus attention to immediate external stimuli). 8) Re-analysis of the same set of test and performance data for a given student, if made from several different vantage points, will reveal conflicts and interactions not observable when different tests are given for each variable being assessed.

Over many years of work with this model, we have learned, step-by-step, how to classify the cultural themes in a student's productions, how to Q-sort projective material and personal interaction responses, how to recognize styles and misuse of skills in wrong responses, and how to identify imitative behavior and describe role-relationships. Also, through research, we know some of the effects of the role-relations mentioned above on the cognitive processes of academically successful students. We are now extending this research to students with problems. The specific focus of the present study, for which one year's funding was received from the State Department of Education, is on six areas of the model which were selected for refinement and validation during the 1979-80 school year. These were as follows:

1. A breakdown of fathers' Technology Group occupations into occupational subgroups according to their effects on offspring. This step was needed because 45% of the total population of students referred for problems had fathers in this one category of occupations. It was assumed that differential effects within that category would be found.

2. A description of the total population of students referred to psychological services for school problems was needed in order to determine the extent to which methods and findings could be generalized.

3. A review of changes in the population over the two decades during which students have been referred was needed.

4. Refinement of a checklist for personal interaction responses during testing. Validation of the list in terms of learning space factors and effect on performance, with special focus on "learned helplessness" and other patterns which interfere with new learning and performance, is the ultimate goal.

5. Refinement of a checklist designed to separate "correct knowledge" from error content in students' test responses. This knowledge is classified by cultural themes, and seems to show interests and activities in which the student has some involvement. Validation of this list, also, in terms of learning space factors and student performance is sought. A second purpose is to assess the extent of a student's exposure to the dominant culture reflected in standardized tests, and to give separate weights to "correct content" in comparison to "error content" in the analysis of what is being transmitted through cultural channels within the family.

6. Establishment of a way to outline a) the structure of role relations and b) the "mosaic" of cultural themes brought out in the finished case studies in our files. Some combinations of these elements seem to form syndromes for which, hopefully, remedial prescriptions can one day be formalized. Meanwhile, the step taken this year provides for a clear outline of case findings which can then be tested as the objective checklists decribed above are refined and validated.

In all six of the foregoing studies, some pertinent findings were made this year, though only the refinement of the model for classifying fathers' occupations was completed. Work on the remaining tasks is on-going. First, a search was made of the literature on our background variables to find models for predicting the effects of social roles on cognitive styles. The general conclusion found for all the background role-relationship variables was that genetic factors, processes of direct imitation and reinforcement, and selective learning based on value orientation developed by the child, all impress themselves in the development of the child. The model required for assessment of learning space factors and their effects is, therefore, complex, and only a holistic assessment which allows for interactions among these role-relations will suffice.

Some reclassification of fathers' occupations was done on the basis of the preliminary study of the relation of Scholastic Aptitude Test scores to fathers' occupations in a population of successful students. It was found that the seven major subgroups into which Technology occupations were divided were quite uniformly related to the development of SAT mathematics skills, with sons strongly favored; also SAT verbal aptitudes were higher for daughters in three of the seven subgroups, but even lower than SAT mathematics aptitudes in the remaining four. Thus, as in previous studies, Technology occupations of fathers, overall, seemed related to strong sex-typing factors which adversely affect cognitive development in girls. The only other difference among subgroups of Technology occupations was in the general level of abstract functioning which each one fostered. In applying the classification of occupations to the work that followed, the Technology group was now divided into Sex-type I and II. Some other divisions were also made which removed Technology cases to other occupational groups entirely.

The population of students referred for psychological services numbered 1841 cases. The four background variables used to classify them resulted in a 360-cell matrix (2 sex, 6 ethnic, 3 ordinal place, 10 occupational groups). As single-parent and bi-racial homes, fathers in changing occupations, and major shifts in ordinal place could not be classified in this matrix without vastly increasing the number of cells, separate matrices were made for these ambiguous variables. These matrices are a basis for study of "broken homes" for which an adequate model was not found; the complex variables they reflect are also worthy of study in their own right.

The research population occupied only 39 percent of the 360 cells. Boys outnumbered girls two to one, and spread through 47 percent of their cells while girls occupied only 26 percent of theirs. Middle children outnumbered others, as expected, but were distributed through about the same number of potential cells. Over half the students were of North European background, 26 percent were Hispanic, and 11 percent Black. "Other whites" (North European and Mediterranean) and Blacks were over-represented in relation to the District population, while Hispanics were under-represented, as were students of Oriental background. The cases with North European background spread over 85 percent of their possible cells, the Hispanics 68 percent, Blacks 32 percent, and Oriental-Americans 20 percent. The most populous cell (Middle N. European boy with Technology Sex-type I father) had 79 cases, while 204 cells had no cases at all. The empty cells were mainly for girls and ethnic and occupational groups with small N's in the total population.

Some interactions among backgrond variables were found. The sex of the student seems to have had less bearing on reasons for referral in bi-racial cases than those from single-parent or one-race homes, _if_ the father's occupation was stable; but the proportion of boys increased from 60 to 82 percent for occupationally unstable homes. An interaction with sex was indicated for ordinal place in that there were disproportionate numbers of oldest girls and youngest boys in the population, while the proportions for each sex differed little for middle children. For middle children there was an interaction with stability of the father's ocupation so that the proportion of middle children increased markedly if the father was unemployed or disabled. The effect of unstable occupations was greatest for middle Hispanic and Black sons, and for middle children of both sexes in bi-racial homes. With ten occupational categories involved, the cases were spread too thinly over most cells for comparison. However, oldest daughters seemed to cluster under the most verbal, people-oriented occupations, suggesting sex-typing conflicts when fathers are very "verbal," while on the other hand, the proportion of daughters referred for problems under those Technology occupations which seem to support verbalism in girls was very low. South European cases seemed clearly to cluster under Business categories, but the small N's are not reliable. In 1980-81 a search of additional records is planned in order to fill in missing data on approximately one-third of all cases, and to update the case list so that the cell location for these cases, too, can be determined.

Over the years, "Other whites" (N. European and Mediterranean background) have accounted for about 50 percent of all referrals, but in the interval for 1961 through 1965, evaluations for the program for the "educable mentally retarded" caught up disproportionate numbers of Hispanic students. Later, their proportion dropped from 79 to 26 percent as this program was scaled down. Other changes over the years seem to reflect the changing ethnic composition of the district as a whole, except for a disproportionate increase in youngest children which seems over and above the effect of decreasing family size.

The work on Item 4 on our list, the "personal interaction inventory", progressed during the project year through the steps of collecting and classifying all personal interaction responses in a sample of 100 test protocols. These responses seemed to range along a continuum from "least control" over task, situation, tester and self to "greatest control." At the "least control" end were undifferentiated, poorly focused reactions which tended to draw the tester in to help in some way, and resembled descriptions of "learned helplessness" in the literature. An intermediate stage where the student seems to separate self from the total situation and draw on his or her own resources in an ego-centric way was identified. At the "most control" end, four types of skilled responses were found; these were techniques for 1) making an integrated response (the ideal adaptive response), 2) avoiding the situation, 3) "turning off"self or the tester, or 4) deserting the task and interacting with the tester instead. The result of this work is a researchable model for further study of those types of personal interaction variables which interfere with task performance.

The first steps in creating an appropriate checklist and scoring manual for these variables were also completed, but an attempt at factor analysis showed that the 148 variables involved had been too finely partitioned to yield meaningful results. Such fine partitioning had been done in order to remove subjective elements as completely as possible. We will now work back from the correlation matrices. These show limited numbers of variables with very extensive positive and negative correlations. Such variables suggest a structure for grouping other minor variables so that the high degree of multi-colinearity that was found can be eliminated, allowing the analysis to proceed. The work on this highly important checklist is continuing.

A format for the "correct knowledge inventory", Item 5 on our list, was refined and scoring instructions were set up. By the end of the project year, all cases for whom we have WISC or WAIS protocols and sentence completions, through the class of 1978, had been scored, checks showing adequate inter-rater reliability were done, and a pilot study of the "correct knowledge" profiles of limited numbers of cases in ten learning space cells had been done. Since the scoring of all cases had not been finished, and only WISC protocols were used, the cell N's ranged only from seven to 12 cases. Seven of the cells were for students of North European background, and two were Hispanic. Four were for girls; two were for youngest boys and one for oldest girls while the rest were for middle children. Four were for Technology occupations of fathers and six were occupationally unstable.

In none of the cells did the average student score higher than 56 percent correct; the lowest score was 39 percent for Middle Hispanic girls with father's occupation changing. All cells were disproportionately low on Humanities and Science/Technology categories, with none above 44 percent. On the other hand, most had average scores above 80 percent for categories of Human Attributes and Food/Health. Overall, the checklist seemed to distinguish between cells as to total score, interpreted as differences in level of abstract functioning. The highest scores were for North European oldest and middle boys and girls in the Technology group, and for oldest girls from this ethnic group with father's occupation changing. The average scores for each category in each cell were then multiplied by an index number based on the average level of abstractness for that cell in order to make direct comparisons of profiles possible. Profile variations which suggested interest in verbal-social areas were found for sons with Technology Sex-type II fathers, but not Sex-type I, while daughters of Sex-type II fathers had the highest average indexed score for knowledge of Sports/Outdoor/Calendar information, suggesting once more that a real difference in the effects of these two Technology occupation clusters would be found in more reliable studies. For the two Hispanic cells, the indexed average for boys was ahead of all others in Science/Technology information, while the profile for the middle Hispanic girls was the most unlike others of any cell. Their Science/Technology score was close to zero, while the highest areas were Animals, Human Attributes and Human Actions, and Clothes. This study too is continuing, with many cases yet to be scored. The comparison of cell profiles will then proceed wherever N's are large enough, and other types of analyses for the purposes previously described will be done.

Finally, for Item 6 on our list, outlines for a sample of completed case studies were finished. These suggested re-occurring patterns of role-structure, cultural themes and student performance which seemed inter-related and might be considered as syndromes. Material abstracted from four examples of repeating configurations was laid out to show such relationships in table form. Conflicts between themes were also indicated, along with treatments to resolve them. The four syndromes identified in this way were: "Masculinized/Aggressive Girl," "Helpless/Handicapped Boy," "Authoritarian/Aggressive Boy," and "Mothering/Passive Girl." It is to be emphasized that, while the finished case studies from which these syndromes were derived had relied on very close comformity to the case data that had been assembled, rather than any theoretical model, the syndromes described remain in the realm of clinical studies pending validation by more objective means. Work is continuing on a "cultural theme" checklist and a more extensive skill inventory than our checklist for personal interaction skills. The correlates for these instruments will eventually shed light on the inter-relations which appear to create such syndromes. Hopefully, we will then see an end to the sad situation where, through failure to understand cultural influences, a student with a full range of potential capabilities is forever locked within the limited modalities which his or her particular subcultural milieu may allow.

CONCLUSIONS:

Though the final steps in setting up the "personal interaction" inventory were not completed, the model that was set up is quite important for Special Education. Its use will lie, not only in assessment of "learned helplessness", but also in assessment of highly skilled habits many students have developed for doing "something else" when assigned a task. With means to recognize such patterns, antecedents and corrective measures for this behavior can be explored, and many endless power-struggles over the lessons themselves can be resolved.

Similarly, the "correct knowledge" inventory adds meaning to test profiles, indicating, as it seems to do, the degree of exposure and involvement in situations where culturally standard things are learned. It also allows us to deal with error patterns in terms of cultural content, for it separates out the standard themes which tests "pull" for, and which, therefore, give little unique cultural information. However, further exploration of the ways to deal with standard information in the assessment of cultural themes will be needed before theme checklists can be completed.

The pilot study of cell profiles of "correct knowledge" provided a test of the usefulness of the "learning space" cell approach to research on effects of multiple interacting background variables. The review of the literature that was made at the start of this year's project would be discouraging if one felt bound to track each background variable separately in analyzing the antecedents of adolescent problems. A method which takes interactions among variables for granted holds promise for research in this complex field. Further background variables such as mothers' occupations, socio-economic level, and the like can then be dealt with across the basic configurations in each matrix, as desired.

Evidence of inhibiting effects of one type of learning upon others continually turns up in our case studies. This appears to be a most fruitful, almost untouched area, for further search into the causes of interference with learning. The idea that learning could disable learning is rarely encountered. The preliminary SAT study of father's occupations, and the lists of conflicting themes found in the four clinical syndromes described here, set the stage for such inquiry, but no work was directly addressed to this area this year.

In general, the enormous commitment to care for the handicapped which is now imposed on publi-schools has exposed great looseness in diagnostic methods and extremely vague definitions of handicapping conditions. The present structure of programs often leads to damaging diagnoses heaped on students who are already losing out, despite intelligent, rational attempts to cope with "learning space" problems. A rush of practitioners of all stripes to cash in on a potential bonanza is also encouraged. It is imperative, therefore, to develop a model which objectively counter-balances too easy attribution of serious learning and behavior problems to unprovable internal physiological and emotional causes. It is all too easy, also, to turn impressive labels for symptoms such as "dyslexia", "enuresis", "hyperactivity", "emotional problem", etc. into notions of diseases in their own right. Frequent uncritical acceptance and perpetuation of such labels seems to satisfy many users, justifies irrelevant treatments, and ends the process of inquiry into real causes of a student's problems, often excusing those involved from dealing with it, even if it is found.

Meanwhile, close examination will show that many so-called "learning disabled" students are, indeed, such able learners that they lead complex lives outside the classroom, and have highly skilled patterns which interfere with classroom expectations. These cases show no basic inability to learn, but rather a different set of priorities. However, present practice requires that they be labeled "disabled" if help in coping with their lives is to be provided. A weakness is thus ascribed to the student alone, leaving a question of mental incompetence in his or her record, and opening the door for misuse of records by vengeful parents.

Careful analysis will also show that most "behavior disorders" turn out to be situational reactions which reflect carry-over of inappropriate patterns which are, in fact, survival skills in other settings. In only a few cases do we find irrational responses requiring the label of "disorder." Many of the complaints involve imitative patterns which a student is trying out after others have failed, or in the absence of alternatives when under heavy achievement pressure. Thorough examination of related materials in the record will usually reveal a pro-social intent in an immature, poorly prepared child. This is not to say that misbehavior should be condoned, but rather to bring it into the realm of rational responses amenable to change by teachers.

The area of "emotional problems" is vaguest of all, based as it is on an unassailable theory that the source of problems is hidden within the student's affect. The student is denied the right to deny feelings, and so much re-interpretation is done that many affectively-oriented assessments turn out to be more of a projection of the assessor's beliefs than anything else.

Confronted as we often are with only such unsatisfactory assessments of "handicaps" in student records, we must often make placement recommendatins which we know have little chance of success, and we find it difficult to set criteria amid a welter of vague entities more often defended by their advocates as beliefs than as fact. We are therefore pursuing the analysis of error in all cases where low scores are reported, not only from a "criterion referenced" point of view, but also in terms of the cultural and cognitive skill correlates of error. We aim to find out what that "something else" that the student does entails, where it comes from, and why it continues.

For chronic problems in high school students, the study of a "person in a learning space" is absolutely crucial. It will nearly always be found that treatment has actually reinforced the problem in some subtle way, so that adjustment never takes place. Painstaking analysis of a large amount of test and observational detail, as well as background factors, is needed. But when such counter-productive interactions are finally located, the door is open to resolution of frustrations on every hand. Thus, we are eager to move ahead with the next phases of our assessment model, and grateful for the help received during the past project year. Meanwhile, the work is continuing with such resources as we can find.

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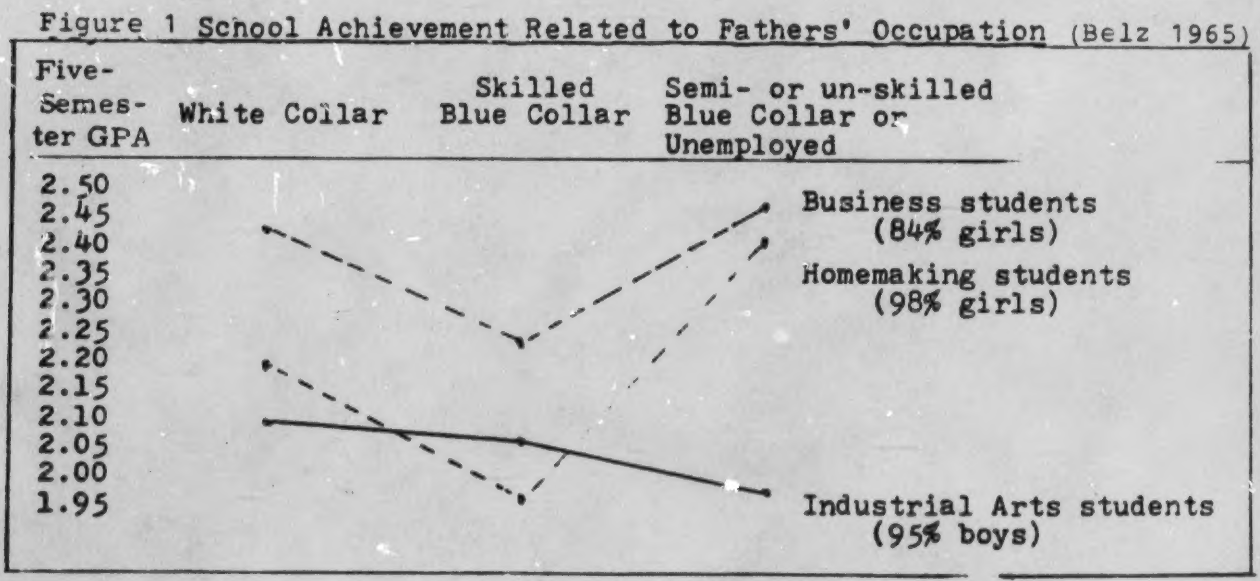
PART I

EFFECTS OF FAMILY BACKGROUND ON COGNITIVE FUNCTIONS

Family background, as it affects the growth of cognitive functions, must be studied in terms of role relations. While each of the major roles a child experiences at home (sex, parent occupation, ethnic status, ordinal place, dominant parent) makes an independent contribution (Belz 1971), they must also interact so that multivariate procedures are needed to comprehend their effects in the transmission of culture and mental skills. Such a holistic approach is the goal of this research, but at the start, each role-relationship must be described separately.

The first work done by us on effects of fathers' occupation was on school achievement in a follow-up of 1065 high school graduates from the class of 1963 in our multi-ethnic district. Figure 1 shows mean grade averages for students in other than college preparatory majors, grouped by occupations of fathers. Since those in Business and Homemaking were 84 and 98% girls and their curves are roughly parallel, only at different levels, while Industrial Arts students were nearly all boys, an interaction of fathers' occupation with sex-typing seemed evident. Figure 1 shows that, for boys there was a direct decline in school functioning as the fathers' occupation became less skilled, suggesting that work skills needed for school were not being transmitted by fathers at the bottom of the job hierarchy.

Figure 1 School Achievement Related to Fathers' Occupation (Belz 1965)



		Bus.	Hmkg.	IA
Related Background Variables:	N	168	80	101
	Broken Homes	13%	15%	17%
	Minority Group	16%	19%	29%

For girls, intellectual functioning seemed depressed when fathers were successfully employed in blue collar occupations, indicating a complementary relationship between girls and fathers which earned through for unskilled fathers as well. Thus the separation of sex-typed roles seems most extreme toward the bottom of the job hierarchy. At the bottom, boys may lack adequate models for achievement, while girls are more apt to shift to a competent female model. (Belz 1965)

Additional study of the effects of social background on the cognitive profiles of high school students, as determined by the Scholastic Aptitude Test (SAT), showed significant independent, cumulative effects of sex, ordinal place, ethnic status, marital status of parents, and father's occupation. Again, interactions between roles, as they affect profiles, are undoubtedly present. For example, the effects of sex-typing seemed more pronounced for students with lower SAT scores than among more academically oriented students and these students are more often from lower socio-economic levels. (Tables 1-6, Belz 1971)

Table 1. Means, standard deviations, and correlation coefficients for background variable subgroups

Role			SAT V		SAT M		
Variable	Subgroup	N	Mean	S.D.	Mean	S.D.	r_{VM}
SEX	Boys	498	46.1	11.7	52.7	11.5	.679
	Girls	446	47.3	10.7	47.3	10.8	.539
F-test for diff.			2.86		55.11**		
ORDINAL PLACE	Oldest	132	50.0	10.5	51.1	10.7	.498
	Middle	128	48.6	11.5	52.7	11.9	.680
	Youngest	63	49.4	10.9	54.4	10.6	.570
F-test for diff.			0.51		2.04		
MARITAL STATUS OF PARENTS	Intact	778	46.7	11.1	50.4	11.4	.632
	Live w/ mother	127	45.9	12.1	47.8	11.7	.712
F-test for diff.			0.68		5.71*		
FATHERS' OCCUPATION	Service	46	41.5	12.5	44.3	12.6	.799
	Cultural	51	54.3	11.1	54.7	10.6	.590
	Contact	27	51.4	11.0	51.1	8.9	.612
	Science	33	52.1	11.4	55.8	9.5	.554
	Outdoor	42	45.4	11.4	52.5	10.5	.633
	GunCarry	55	47.3	11.1	49.9	13.8	.746
	Organiz.	162	47.3	11.0	52.1	11.0	.500
	Technol.	431	45.2	10.9	49.7	11.1	.639
F-test for diff.			7.18**		5.12**		
ETHNIC	No.Eur.	655	48.5	10.6	51.8	10.8	.576
	Orient.	72	47.2	11.8	55.2	10.0	.675
	SpanAm.	114	41.8	11.0	44.9	10.4	.676
	Black	53	35.5	9.4	36.0	10.1	.685
	So.Eur.	40	45.8	11.0	48.1	9.7	.623
F-test for diff.			25.08**		39.05**		

*P < .05
**P < .01
Note: Arts and Entertainment were omitted from Fathers' Occupations because of small N.

From: Belz, H. Relation of Convergent and Divergent Thinking to Complex Problem-Solving
University Microfilms (dissertations), Ann Arbor, Mich. 1971.

Table 2. Cumulative effects of sex and ordinal place on SAT scores

Group	N	SAT V Mean	SAT V S.D.	SAT M Mean	SAT M S.D.	Difference between V and M
Boys	498	46.06	11.67	52.67	11.51	-6.61
Girls	446	47.30	10.73	47.27	10.77	0.03
Difference		-1.24		5.40**		
Oldest	132	49.98	10.48	51.06	10.67	-1.08
Youngest	63	49.41	10.94	54.43	10.57	-5.02
Difference		0.57		-3.37*		
Oldest girl	68	51.13	8.41	47.74	9.34	3.39
Youngest boy	33	48.58	11.89	57.09	10.51	-8.51
Difference		2.55		-9.36**		

Table 3. Cumulative effects of sex and broken home on SAT V and M scores when mother remains in home as compared to when father remains

Group	N	SAT V Mean	SAT V S.D.	SAT M Mean	SAT M S.D.	Difference between V and M
Home intact	778	46.75	11.08	50.43	11.32	-3.68
Live with mother	127	45.87	12.12	47.81	11.72	-1.94
Live with father	14	51.50	11.67	52.50	13.11	-1.00
Differences:						
Intact/mother		0.88		2.62**		
Intact/father		-4.75		-2.07		
Mother/father		-5.63		-4.69		
Boys home intact	408	46.11	11.71	52.99	11.56	-6.88
Girls home intact	370	47.47	10.29	47.60	10.50	-0.13
Difference		-1.36		5.39**		
Boys with mother	65	45.92	12.29	50.20	11.15	-4.28
Girls with mother	62	45.81	12.05	45.31	11.86	0.50
Difference		0.11		6.89*		
Boys with father	7	48.00	9.02	57.86	13.25	-9.86
Girls with father	7	55.00	13.60	47.14	11.41	7.86
Difference		-7.00		10.72		

*$p < .05$ t-test
**$p < .01$ t-test

From: Belz, H. Relation of Convergent and Divergent Thinking to Complex Problem-Solving
University Microfilms (dissertations), Ann Arbor, Mich. 1971

Table 4. Number and percent of cases correctly and incorrectly classified in the discriminant analysis of family background variable

Variable Subgroup — Step I

SEX

	Male N	Male %	Female N	Female %
Male	301	60	197	40
Female	187	42	259	58

ORDINAL PLACE

	Oldest N	Oldest %	Middle N	Middle %	Youngest N	Youngest %
Oldest	73	55	13	10	46	35
Middle	57	45	12	9	59	46
Youngest	24	38	2	3	37	59

MARITAL STATUS OF PARENTS

	Intact N	Intact %	Broken N	Broken %
Intact	410	53	368	47
Broken	58	46	69	54

OCCUPATION OF FATHER

	PerServ N	PerServ %	GenCult N	GenCult %	BusCont N	BusCont %	Science N	Science %	Outdoor N	Outdoor %	GunCrry N	GunCrry %	BusOrg N	BusOrg %	Technol N	Technol %
Pers.Serv.	28	61	11	24	2	4	0		2	4	1	2	1	2	1	2
Gen.Cult.	9	18	30	59	2	4	4	8	1	2	2	4	2	4	1	2
Bus.Cont.	7	26	11	41	2	7	2	7	2	7	1	4	0		7	7
Science	9	27	14	42	3	10	4	12	0		1	3	0		2	6
Outdoor	20	48	11	26	1	2	3	7	2	5	4	10	1	2	0	
GunCarry	22	40	14	25	5	9	4	7	5	9	5	9	0		0	
Bus.Gov't.	6[illegible]	38	49	30	9	6	8	5	9	6	16	10	5	3	5	3
Technology	186	43	108	25	28	6	29	7	23	5	30	7	14	3	11	3

ETHNIC

	N.Europe N	N.Europe %	Oriental N	Oriental %	Mexican N	Mexican %	Black N	Black %	S.Europe N	S.Europe %
N.Europe	90	14	290	44	106	16	105	16	64	10
Oriental	15	21	39	54	6	8	6	8	6	8
Mexican	8	7	26	23	28	25	45	39	7	6
Black	1	2	3	6	7	13	38	72	4	8
S.Europe	3		11	27	13	32	8	20	5	13

Variable Subgroup — Step II

SEX

	Male N	Male %	Female N	Female %
Male	316	63	182	37
Female	158	35	288	65

ORDINAL PLACE

	Oldest N	Oldest %	Middle N	Middle %	Youngest N	Youngest %
Oldest	73	55	23	17	36	27
Middle	49	38	25	20	54	42
Youngest	20	32	12	19	31	49

MARITAL STATUS OF PARENTS

	Intact N	Intact %	Broken N	Broken %
Intact	415	53	363	47
Broken	53	42	74	58

OCCUPATION OF FATHER

	PerServ N	PerServ %	GenCult N	GenCult %	BusCont N	BusCont %	Science N	Science %	Outdoor N	Outdoor %	GunCrry N	GunCrry %	BusOrg N	BusOrg %	Technol N	Technol %
Pers.Serv.	24	52	5	11	6	13	3	7	5	11	1	2	0		2	4
Gen.Cult.	6	12	23	45	7	14	7	14	4	8	1	2	0		3	6
Bus.Cont.	7	26	10	37	2	7	3	11	4	15	1	4	0		0	
Science	4	12	10	34	3	10	8	24	7	21	1	3	0		0	
Outdoor	13	31	4	10	3	7	7	17	12	29	2	5	1	2	0	
GunCarry	17	31	6	11	8	15	9	16	10	18	3	5	2	4	0	
Bus.Gov't.	35	22	17	10	23	14	31	19	47	29	4	2	3	2	2	1
Technology	139	32	55	13	66	15	56	13	94	22	10	2	4	1	7	2

ETHNIC

	N.Europe N	N.Europe %	Oriental N	Oriental %	Mexican N	Mexican %	Black N	Black %	S.Europe N	S.Europe %
N.Europe	148	22	238	36	70	11	95	14	104	16
Oriental	17	24	37	51	8	11	6	8	4	6
Mexican	12	11	22	19	17	15	42	37	21	18
Black	2	4	2	4	7	13	38	72	4	8
S.Europe	6	15	8	20	10	25	9	23	7	18

Note: Correct classification is underlined.

From: Belz, H. Relation of Convergent and Divergent Thinking to Complex Problem-Solving
Univeristy Microfilms (dissertations), Ann Arbor, Mich. 1971

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Table 5. Constants in the equations for discriminant lines.

Background Variable	Subgroup	Step I Variable	Constant	Combined Variables	Constant
SEX	Male	M	-11.12	M,V	-11.90
	Female	M	- 8.95	M,V	-10.64
ORDINAL PLACE	Oldest	M	-10.52	M,V	-13.15
	Middle	M	-11.20	M,V	-13.26
	Youngest	M	-11.95	M,V	-13.97
MARITAL STATUS OF PARENTS	Intact	M	- 9.73	M,V	-11.22
	Broken	M	- 8.75	M,V	-10.40
FATHERS' OCCUPATION	Service	V	- 7.26	V,M	- 9.13
	Cultural	V	-12.45	V,M	-15.02
	Contact	V	-12.45	V,M	-13.28
	Science	V	-11.46	V,M	-14.72
	Outdoor	V	- 8.69	V,M	-12.26
	GunCarry	V	- 9.44	V,M	-11.93
	Organization	V	- 9.44	V,M	-12.54
	Technology	V	- 8.99	V,M	-11.61
ETHNIC	No.Europe	M	-11.87	M,V	-13.85
	Oriental	M	-13.48	M,V	-14.77
	SpanAmer	M	- 8.89	M,V	-10.34
	Black	M	- 5.72	M,V	- 7.00
	So.Europe	M	-10.21	M,V	-12.10

Table 5 shows the constants in the equations for discriminant lines. As these constants show the relative positions of subgroups on that line, they give an estimate of mean differences in levels of abstractness for the various categories of students.

Table 6. Variance and Covariance Matrices and F-tests for Discriminant Functions of SAT V and M for Social Background Variables. (Stepwise analysis).

Background Variable	N	Aptitude Variable Entered	Grand Mean	Matrix of Variance		Matrix of Covariance		F-tests for Functions of V and M	df	F-test for Bivariate Function	df
				V	M	V	M				
SEX	944									68.47**	2, 941
		M	50.1	.67	1.00	84.6	124.8	133.69**	1, 941		
		V	46.7	1.00		126.3		77.37**	1, 941		
ORDINAL PLACE	321									2.43*	4, 638
		M	52.4	.59	1.00	72.1	124.0	4.37*	2, 319		
		V	49.3	1.00		120.2		2.82	2, 319		
MARITAL STATUS OF PARENTS	905									3.29*	2, 902
		M	50.1	.64	1.00	82.7	130.6	5.89*	1, 902		
		V	46.6	1.00		126.0		0.87	1, 902		
FATHERS' OCCUPATION	847									4.86**	14, 1676
		V	47.1	.63	1.00	76.2	125.1	4.61**	7, 838		
		M	50.6	1.00		118.5		2.99**	7, 838		
ETHNIC	934									21.45**	8, 1856
		M	50.2	.60	1.00	68.6	113.2	17.91**	4, 928		
		V	46.7	1.00		111.8		5.03**	4, 928		
FATHERS' OCCUPATION FOR BOYS	446									2.31**	14, 872
		V						2.93**	7, 436		
		M						2.02**	7, 436		

* P <.05
** P <.01

From: Bels, N. Relation of Convergent and Divergent Thinking to Complex Problem-Solving. University Microfilms (dissertations), Ann Arbor, Mich. 1971

For this study, fathers' occupations were classified according to groups worked out by Roe (1956). Her grouping was based on findings of common interests and values across occupational levels. A ninth group, guncarrying, was added. The list of occupations for each group is shown in Table 7.

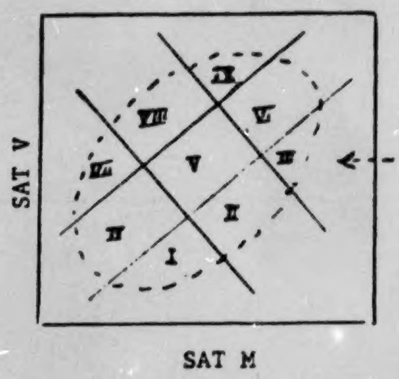
Table 7. Two-way classification of occupations by groups and levels. (This table is adapted from the book Psychology of Occupations by Anne Roe. Copyrighted by John Wiley and Sons, Inc., 1956, and used with permission of the publisher.)

Level	Group							
	I. Service	II. Business Contact	III. Organization	IV. Technology	V. Outdoor	VI. Science	VII. General Cultural	VIII. Arts & Entertainment	IX. Guncarrying
1	Personal therapists Social work supervisors Counselors	Promoters	US President and cabinet Industrial tycoons Inter	Inventive geniuses Consulting or chief engineers Ships' commanders	Consulting specialists	Research scientists University and college faculties Medical specialists	Supreme court justices University and college faculties Prophets Scholars	Creative artists Great performers Teachers, university equivalent Museum curators	Chiefs of staff
2	Social workers Probation, truant (trained)	Promoters	Certified accountants Executives Union officials Brokers	Applied scientists Factory managers Engineers Ships' officers	Applied scientists Landowners, large Operators Landscape architects	Scientists, semi-independent Nurses Pharmacists Veterinary Math,science teachers	Editors Teachers, high school and elementary	Athletes Art critics Designers Music arrangers	Officers Chiefs FBI agents Sheriffs
3	YMCA officials Welfare workers City inspectors	Salesmen: auto, bond, insurance, etc. Dealers Confidence men	Accountants Employment managers Proprietors	Aviators Contractors Foreman (DOT I) Radio operators	County agents Farmers, Forest rangers Game wardens	Technicians: medical, X-ray, museum Weather observers Chiropract.	Justices of the peace Radio announcers Reporters	Ad writers Designers Interior decorators Showmen	Non-coms Detectives Police sergeants
4	Barbers Chefs Practical nurses Telephone operator	Auctioneer Buyers (DOT I) House canvasser Poll-taker	Cashier Clerks, credit, freight,etc. Foremen, warehouse Salesclerk	Blacksmith Electrician Foremen (DOT II) Mechanic, average	Laboratory worker Miners Oil driller	Technical assistants	Law Clerks	Advertising artists Decorators, window, etc. Photographer Race car driver	Policemen Bailiffs Deputy sheriffs
5	Taxi driver General houseworker Waiter City fireman	Peddler	Clerks, file,stock etc. Notary Runners Typists Keypuncher	Bulldozer Deliveryman Smelter worker Truckdriver	Gardener Tenant farmer Teamster, cowpuncher Miner's helper	Veterinary attendant		Illustrator, greeting cards Showcard writer	Guards Privates Seamen
6	Chambermaid Hospital attendants Elevator operators		Messenger	Helpers Laborers Wrappers Yardmen	Dairy hand Farm labor Lumberjacks	Nontechnical helpers in scientific organization			

From: Belz, H. Relation of Convergent and Divergent Thinking to Complex Problem-Solving. University Microfilms (dissertations), Ann Arbor, Mich. 1971
'Roe's data used with permission from the publishers'

A contour analysis was also made, showing the number of cases falling in each of nine cells laid out on the SAT Varbal x Mathematics plane, as shown in Figure 2.

Figure 2. Key to Areas Sampled on the SAT Verbal x Mathematics Plane



← - Distribution of Cases

The results of the centour analysis are shown in Table 8 and Figure 3. The effects of background role categories were fairly clear-cut in most cases, but the centour analysis showed ambiguity in the distribution of cases for three of the occupational groups in Table 7, namely, Technology, Gun-carrying and Science.

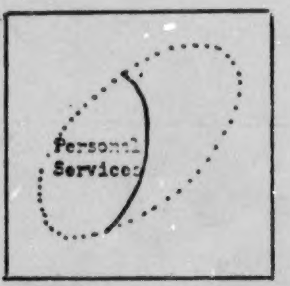
Table 8. Centour Analysis for Average Cases for Each SAT Cell showing the square of the distance from, and posterior probability for, membership in social role clusters.

	I		II		III		IV		V		VI		VII		VIII		IX	
Groups	D^2	P	D^2	P	D^2	P	D^2	P	D^2	P	D^2	P	D^2	P	D^2	P	D^2	P
Sex M	1.18	.63	.69	.72	1.75	.75	1.29	.44	.16	.50	1.60	.58	2.99	.28	1.83	.33	2.81	.37
F	2.26	.37	2.54	.28	3.97	.25	.84	.56	.16	.50	2.27	.42	1.10	.72	0.53	.67	1.73	.63
Ordinal																		
Oldest	1.96	.28	1.25	.27	2.55	.24	1.54	.35	.05	.34	1.43	.31	2.71	.47	0.51	.40	1.27	.39
Middle	1.44	.37	.71	.34	1.88	.34	1.53	.35	.03	.34	1.33	.32	3.54	.30	1.02	.31	1.77	.30
Youngest	1.51	.36	.54	.38	1.45	.42	1.89	.30	.10	.33	1.06	.37	4.06	.24	1.24	.28	1.76	.31
Home																		
Intact	1.49	.51	1.21	.57	2.35	.60	.97	.46	.01	.51	1.70	.56	1.85	.43	1.07	.47	2.10	.51
Broken	1.59	.49	1.73	.44	3.16	.40	.68	.54	.08	.49	2.21	.44	1.25	.58	0.83	.53	2.14	.50
Ethnic																		
N.Europ.	1.93	.16	1.26	.24	2.33	.27	1.49	.14	.01	.25	1.54	.33	2.35	.14	0.98	.27	1.81	.35
Oriental	1.55	.40	.40	.36	1.25	.46	2.06	.11	.31	.22	1.44	.35	3.83	.07	2.17	.15	2.80	.21
Mexican	.99	.26	1.97	.17	4.40	.10	.25	.27	.42	.20	3.84	.11	1.12	.25	1.47	.21	3.58	.14
Black	1.67	.19	4.60	.05	8.51	.01	.15	.23	2.15	.09	7.70	.02	.58	.33	2.68	.11	6.35	.04
S.Europ.	1.55	.20	1.70	.19	3.41	.16	.73	.20	.08	.24	2.53	.20	1.46	.21	0.90	.25	2.34	.27
Occupation																		
Pers.Serv	1.03	.19	1.96	.10	4.18	.05	.20	.22	.44	.11	3.68	.04	.98	.21	1.48	.10	3.58	.05
Gen.Cult	3.74	.05	2.20	.08	2.29	.13	2.70	.06	.34	.12	.69	.19	2.80	.09	0.59	.16	.67	.22
Bus.Cont	3.05	.07	2.26	.08	2.94	.09	1.80	.10	.16	.13	1.34	.14	1.82	.14	0.36	.19	.99	.19
Science	2.82	.08	1.23	.13	1.50	.19	2.41	.07	.20	.12	.65	.19	3.19	.07	1.12	.12	1.32	.16
Outdoor	1.10	.18	.56	.19	1.71	.17	1.25	.13	.19	.12	1.86	.11	2.78	.09	1.92	.08	3.00	.07
Gun.Carry	1.78	.13	1.47	.12	2.65	.11	1.04	.14	.01	.14	1.82	.11	1.68	.15	0.85	.14	1.97	.12
Bus.Org	1.57	.15	.93	.16	1.93	.15	1.29	.13	.04	.13	1.54	.12	2.36	.11	1.30	.11	2.23	.10
Technol	1.47	.15	1.28	.13	2.59	.11	.90	.15	.03	.13	2.01	.10	1.73	.15	1.03	.12	2.31	.10

Distance^2: Square of the mean distance of Case k in Group m from all cases in Group l.
Posterior Probability: Probability of Case k in Group l having come from Group m.

Figure 3. Relation of Bivariate Aptitude Scores to Fathers' Occupations

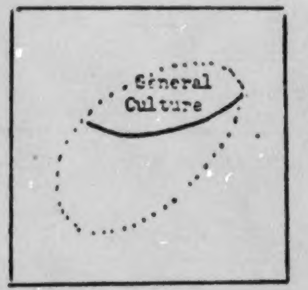
Areas with highest percentages of fathers in particular occupational groups:


Personal Services

Personal services:

Therapists, counselors to elevator operators, chambermaids, etc.

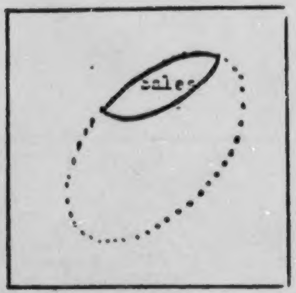
Externally-oriented V+M-


General Culture

General cultural:

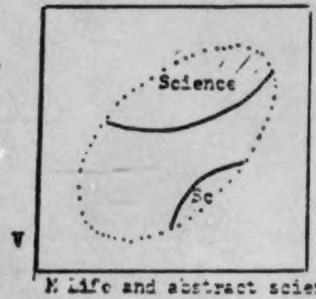
University professors, teachers, lawyers, to radio announcers and law clerks, etc.

Abstract V+M-



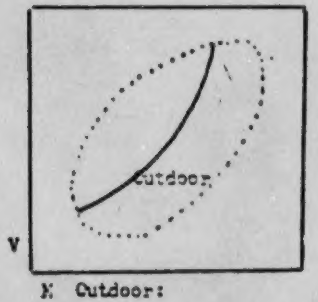
Contact sales:
Promoters, insurance, to polltakers, and peddlers.

Abstract V+M-


Science
Sc
V
M

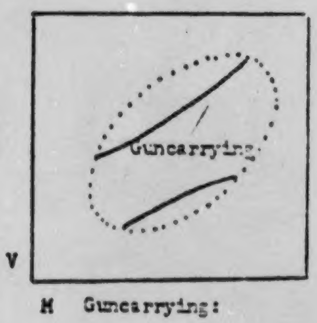
Life and abstract science:

Medical specialists and researchers to non-technical helpers Ab.V+M-



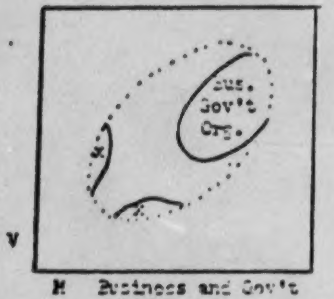
Outdoor:

Consultants, large landowners to dairy hands, lumberjacks V-M+

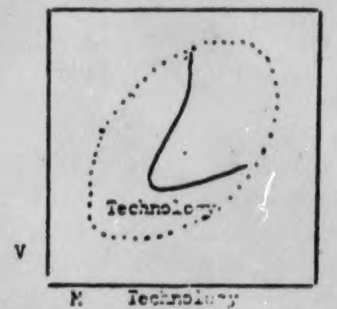

Guncarrying
V
M

Guncarrying:

Chiefs of staff, police, to guards, privates, etc.


Bus.
Gov't
Org.
V
M

Business and Gov't Organization
Industrial tycoons to postal clerks and key punchers
Abstract V-M+


Technology
V
M

Technology
Inventors, chief engineers, to laborers, yardmen, wrappers
Externally-oriented

Arts/Entertainment (insufficient cases)

From Students Who Need A Second Chance. ACSA Conference Paper, Los Angeles, CA. H. Belz, 1974.

PART II

CLASSIFICATION OF FATHERS' OCCUPATIONS FOR FURTHER STUDY

Before taking up research on the relation of background roles to school problems, the above-mentioned ambiguities in the previous work were addressed. Expecting that working class backgrounds will be found for an even larger proportion of the cases referred for school problems, than the 54% found in our SAT population, we broke the large "Technology" category down into subgroups for more detailed study. The validity of the resulting set of empirically determined categories was then tested. Certain occupations which seemed to cut across more than one of Roe's main groups (Table 7) were also isolated for separate study. It also appeared that an interaction with sex-typing effects might account for the peculiar spread of Technology cases on the SAT V x M plane (Figure 3), so this, too was tested.

Subjects. Data were collected on a sample of 641 East Side Union High School District students whose fathers were in Technological occupations. (Senior classes of 1971 through 1974.)

Method. Scholastic Achievement Test (SAT) and Preliminary Scholastic Achievement Test (PSAT) scores for the verbal and mathematical sections were recorded. Scores on the PSAT were converted into the same metric as those on the SAT, thereby allowing for analysis of all subjects at one time. Conversion formulas are as follows:

1) male - verbal $r\frac{0_x}{0_y} = .875y + 8.3$

2) female - verbal $r\frac{0_x}{0_y} = .823y + 12.2$

3) male - mathematical $r\frac{0_x}{0_y} = .752y + 16.8$

4) female - mathematical $r\frac{0_x}{0_y} = .864y + 9.2$

Data also were collected about the subjects' fathers' occupations. The present sample represents only cases in Roe's Technology category. These cases were divided according to seven subcategories for analysis to see if there were significant differences among them. Cases falling in nine special subgroups were also earmarked to determine which category, or other occupational group, fit them best. Analyses were done separately for the seven Technology categories, and for the nine ambiguous special occupations, comparing them to the remaining Technology cases.

Four types of analyses of the score distributions were made. Discriminant analyses for separations of categories on the SAT, Verbal and SAT mathematical dimensions, and a canonical discriminant analysis for bi-variate scores, were followed by analysis of variance and a multi-variate analysis of mean differences. Finally, means for categories were plotted visually, by sex, to look at clustering of categories on the SAT V x M plane.

RESULTS OF THE DISCRIMINANT ANALYSES

Method

The discriminant analysis program of Statistical Packages for the Social Sciences (SPSS) attempts to distinguish between groups of subjects as defined by certain discriminating variables. According to the SPSS manual, "the mathematical objective of discriminant analysis is to weight and linearly combine the discriminating variables in some fashion so that the groups are forced to be as statistically distinct as possible." In other words, we want to see if groups are sufficiently different to "tell them apart." The present analyses were used to determine if the students were classified appropriately into father's occupational categories and special subgroups based on SAT verbal and mathematical scores. The ultimate objective was to determine whether or not the Technical Occupation categories and special subgroups were statistically distinguishable from one another.

The discriminant analysis performs two types of functions. First, the program analyzes the data with respect to significance tests for discriminations made. Also, part of the analytic function is the identification of variables which contribute to the discrimination in terms of the given criterion variables. The second function is the classification of cases (with group membership known) according to the discriminating criterion variables. The procedure also allows for the classification of cases whose group memberships are not known.

The present analyses were performed in two parts. The Technological Occupation category, which was divided into seven parts, was examined. Analyses were run for the entire sample and then separately for males and females. The discriminating variables were SAT verbal and mathematical scores. The analyses were performed to determine if each sample differed statistically according to Technological Occupation category as determined by the SAT scores. Interest focused on the success (Statistical significance) of discriminations, the contribution of the variables to the discriminating power, and classification of cases based on group membership. Identical analyses also were performed for the nine occupational subgroups.

Findings for the subgroups are reported first because effects of some of the occupational subgroups proved to be different enough from Technology patterns to suggest that 93 cases would be better classified in other occupational groups as follows.

Special Occupational Subgroups

On the discriminant analysis of the nine subgroups, only a small number (7% of 641 cases) were classified correctly. Two groups (Technical Writers and

Company Representatives) had only three cases each. The Engineer group includes an unknown number of maintenance workers who call themselves "engineers."

Significance Tests for Special Subgroups of Fathers' Occupation

All Cases

Discriminant Analyses:

Both SAT verbal (p = .0008) and SAT mathematics (p = .025) are significant with respect to special occupational subgroups. The groups differ with respect to SATV and SATM.

Canonical Discriminant Functions:

Two canonical functions were identified. Before any functions were removed, lambda was 0.9333, showing significant discriminating power (p = .0006). Discriminating power decreased by placing it into the first discriminant function. Lambda increases to 0.976. This approaches significance (p = .0547).

Males

Discriminant Analysis:

Neither SATV (p = .07) or SATM (p = .17) are significant. Thus test scores for males do not differ significantly with respect to the occupational subgroups.

Canonical Discriminant Function:

Two canonical functions were identified. Before any functions were removed, lambda was 0.909 (p = .03), showing significant discriminating power. The power decreased to a nonsignificant level with respect to the first canonical function (p = .12).

Females

Discriminant Analysis:

Females differ significantly on SATV (p = .025) with respect to job subgroups, while SATM approaches, but does not reach (p = .064).

Canonical Discriminant Functions:

No significant discriminating power was found. Before with 0 functions removed (p = 0.15). After one function was removed (p = .96).

Conclusions about Occupational Subgroups

Three subgroups seemed to be discriminated best. Figure 4, p.A-20shows their bivariate means located on the periphery of the Technology Group on the SATV x M plane. Cases from all other subgroups overlap on them from more central locations.

Table 16 Discriminant Analysis for Fathers' Occupational Subgroups

Occ Group	Test	Wilk's Lambda	F	P
Spocc - all	SATV	0.95609	3.22	.0008
Spocc - all	SATM	0.97044	2.135	.0249
Spocc - males	SATV	0.95123	1.846	.0685
Spocc - males	SATM	0.96120	1.453	.01743
Spocc - females	SATV	0.9494	2.231	0.025
Spocc - females	SATM	0.9573	1.867	0.0643

Table 17 Canonical Discriminant Functions for Fathers' Occupational Subgroups

Sample	Function	Eigen Value	% of Variance	Cumulative %	Canonical Correlation	Wilk's Lambda	Chi^2	D.f.	Significance
Spocc - All					:0	0.93306	43.924	18	0.0006
	1	0.04629	65.55	65.55	0.21033:1	0.97626	15.236	8	0.0547
	2	0.02432	34.45	100.00	0.15409				
Spocc - Males					:0	0.90881	27.778	16	0.0336
	1	0.05804	59.21	59.21	0.23422:1	0.96156	11.388	7	0.1226
	2	0.03998	40.79	100.00	0.19607				
Spocc-Females					:0	0.93748	21.789	16	0.1501
	1	0.06035	90.98	90.98	0.23857:1	0.99406	2.0124	7	0.9592
	2	0.00598	9.02	100.00	0.07710				

Table 18, Classification of Cases for Father's Occupational Subgroups

Subgroup	N	Remainder of Cases	Contractor	Carpenter	Decoration	Engineer	Science/ Tool Design	Technical Writer	Heavy Equip. Operator	Food Worker	Company Represent
Remainder of Cases	441	16 3.6%	2 0.5%	19 4.3%	44 10.0%	26 5.9%	35 7.9%	67 15.2%	3 0.7%	141 32.0%	88 20.0%
Contractor	16	0 0.0%	0 0.0%	1 6.3%	1 6.3%	2 12.5%	1 6.3%	4 25.0%	1 6.3%	4 25.0%	2 12.5%
Carpenter	31	2 6.5%	0 0.0%	0 0.0%	4 12.9%	4 12.9%	3 9.7%	3 9.7%	1 3.2%	8 25.8%	6 19.4%
Decoration	25	1 4.0%	0 0.0%	1 4.0%	4 16.0%	3 12.0%	1 4.0%	5 20.0%	0 0.0%	8 32.0%	2 8.0%
Engineer	54	3 5.6%	0 0.0%	3 5.6%	9 16.7%	1 1.9%	7 13.0%	14 25.9%	1 1.9%	4 7.4%	12 22.2%
Science/ Tool Designer	23	1 4.3%	0 0.0%	0 0.0%	3 13.0%	1 4.3%	4 17.4%	6 26.1%	0 0.0%	2 8.7%	6 26.1%
Technical Writer	3	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	1 33.3%	2 66.7%	0 0.0%	0 0.0%	0 0.0%
Heavy Equip. Operator	16	1 6.3%	0 0.0%	0 0.0%	1 6.3%	2 12.5%	2 12.5%	2 12.5%	0 0.0%	5 31.3%	3 18.8%
Food Worker	29	3 10.3%	0 0.0%	0 0.0%	2 6.9%	1 3.4%	1 3.4%	2 6.9%	0 0.0%	16 55.2%	4 13.8%
Company Representative	3	0 0.0%	0 0.0%	0 0.0%	0 0.0%	1 33.3%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	2 66.7%

N = 641

% classified correctly 7.02%

Food Workers seemed to belong in a category of their own, with 55 percent of 29 cases classified correctly, and the rest spread out quite evenly. However, one third of all unclassified Technology cases, and 25 to 31 percent of Contractors, Carpenters, Decorators, and Heavy Equipment Operators also overlapped on this area. The effect was stronger for girls alone, with 67 percent of 15 Food Worker cases classed correctly, while for boys the figure was only 21 percent of 14 cases.

Technical Writers, with only three cases, were correctly classified as a separate subgroup or fell in the Science/Mechanical Designer area. These cases were all girls, and are 100 percent correctly classified. However, 15 to 26 percent of other subgroups (Contractors, Decorators, Engineers, Science/Mechanical Designers) overlapped on this area.

Company Representatives, with only three cases, all boys, were also correctly classified or fell in the Engineer subgroup on both the total study and that for boys only. Other subgroups overlapped by percentages up to 26 percent, most notably: Carpenters 19 percent, Engineers 22 percent, Science/Mechanical Designers 26 percent, Heavy Equipment Operators 19 percent, and unclassified Technology cases 23 percent. Some overlap increased when boys were looked at alone (unclassified 26%, Carpenters 27%), and Food Workers also overlapped (21%).

Sixteen percent of Decorators were as predicted, the larger numbers went with Technical Writers (20%) and Food Workers (32%); and up to 17 percent of other groups overlapped, most notably engineers. These figures increased to 25 percent for boys alone, but again 41 percent went to the Food Worker area and 17 percent to Technical Writers; for girls, however, there was a general spread to other subgroups with only 1/13 cases correctly classified. Again the Food Worker area picked up most (31%), while only Carpenters and Science/Mechanical Designers overlapped to any appreciable extent (12 to 13%).

Four of the 23 cases in the Science/Mechanical Designer subgroup were correctly classified (17%), but larger numbers went to Technical Writer and Company Representative areas (both 26%). Only six of the cases were boys, and 67 percent were as predicted, but for girls only one case was correctly classified, while 35 percent clustered with Technical Writers, and 24 percent with Contractors.

Only 20 percent of unclassified Technology cases centered as predicted, while the rest divided, most notably, among Food Workers (32%) and Technical Writers (15%), with 10 percent in the Decorator area. The scatter for the unclassified cases increased for boys so that only 1.9 percent were correctly classified, and the rest divided mostly between Food Worker (25%) and Company Representative (26%) areas. For girls, only 7 percent are correctly classified and the rest divided mostly among the areas of Food Workers (34%), Technical Writers (22%) and Contractors (20%).

Most subgroups for which sizeable percentages were correctly predicted appear to have affected the clustering of boys or girls, i.e., Contractors (girls 33%), Technical Writers (girls 100%), Company Representatives (boys 67%). Food Workers appear to be a category in their own right, but effects were also related mainly to girls (boys 14%, girls 67%). The effects of Food Factory work were strong for both sexes; however, this group may, in fact, belong more in Roe's Personal Service Group than in the Technology Group.

Table 20 Classification of Cases for Father's Occupational Subgroups

Boys

Occup. Subgroup	N	Remainder of Cases	Contractor	Carpenter	Decoration	Engineer	Science/ Tool Designer	Heavy Equip. Operator	Food Worker	Company Representative
Remainder of Cases	208	4 1.9%	5 2.4%	7 3.4%	31 14.9%	18 8.7%	35 16.8%	2 1.0%	51 24.5%	55 26.4%
Contractor	7	0 0.0%	1 14.3%	1 14.3%	1 14.3%	1 14.3%	1 14.3%	0 0.0%	2 28.6%	0 0.0%
Carpenter	15	0 0.0%	1 6.7%	1 6.7%	2 13.3%	1 6.7%	3 20.0%	0 0.0%	3 20.0%	4 26.7%
Decoration	12	1 8.3%	0 0.0%	0 0.0%	3 25.0%	1 8.3%	2 16.7%	0 0.0%	5 41.7%	0 0.0%
Engineer	22	0 0.0%	0 0.0%	2 9.1%	5 22.7%	3 13.6%	6 27.3%	0 0.0%	3 13.6%	3 13.6%
Science/ Tool Designer	6	0 0.0%	0 0.0%	1 16.7%	0 0.0%	1 16.7%	4 66.7%	0 0.0%	0 0.0%	0 0.0%
Heavy Equip. Operator	10	0 0.0%	0 0.0%	1 10.0%	2 20.0%	2 20.0%	1 10.0%	0 0.0%	3 30.0%	1 10.0%
Food Worker	14	0 0.0%	0 0.0%	1 7.1%	7 50.0%	1 7.1%	0 0.0%	0 0.0%	2 14.3%	3 21.4%
Company Representative	3	0 0.0%	0 0.0%	0 0.0%	0 0.0%	1 33.3%	0 0.0%	0 0.0%	0 0.0%	2 66.7%

N = 297 Correctly classified 6.7%

Girls

Occup. Subgroup	N	Remainder of Cases	Contractor	Carpenter	Decoration	Engineer	Science/ Tool Designer	Technical Writer	Heavy Equip. Operator	Food Worker
Remainder of Cases	233	16 6.9%	46 19.7%	1 0.4%	16 6.9%	2 0.9%	12 5.2%	52 22.3%	10 4.3%	78 33.5%
Contractor	9	0 0.0%	3 33.3%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	4 44.4%	1 11.1%	1 11.1%
Carpenter	16	2 12.5%	1 6.3%	0 0.0%	2 12.5%	4 25.0%	0 0.0%	2 12.5%	1 6.3%	4 25.0%
Decoration	13	1 7.7%	2 15.4%	1 7.7%	1 7.7%	1 7.7%	0 0.0%	3 23.1%	0 0.0%	4 30.8%
Engineer	32	0 0.0%	8 25.0%	0 0.0%	2 6.3%	1 3.1%	3 9.4%	11 34.4%	2 6.3%	5 15.6%
Science/ Tool Designer	17	0 0.0%	4 23.5%	0 0.0%	2 11.8%	1 5.9%	1 5.9%	6 35.3%	0 0.0%	3 17.6%
Technical Writer	3	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	3 100.0%	0 0.0%	0 0.0%
Heavy Equip. Operator	6	0 0.0%	1 16.7%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	2 33.3%	0 0.0%	3 50.0%
Food Worker	15	0 0.0%	2 13.3%	0 0.0%	1 6.7%	0 0.0%	1 6.7%	1 6.7%	0 0.0%	10 66.7%

N = 344 Correctly classified 10.2%

Table 22 Means and Standard Deviations for SATV and M for Special Occupational Subgroups

	Subgroup	N	SATV Mean	SATV Std Dev.	SATM Mean	SATM Std Dev.	
	For Entire Population	641	45.8	10.3	49.1	10.3	
0	Not Classified	441	45.2	10.3	49.0	10.4	
1	Contractor	16	47.3	11.9	50.0	8.2	
2	Carpenter	31	45.6	10.1	49.6	10.8	
3	Decoration	25	45.5	10.9	46.7	9.3	
4	Engineer	54	49.2	8.4	51.4	8.5	
5	Science Design	23	52.7	10.5	52.0	12.4	
6	Writing	3	54.9	2.5	50.9	6.0	(all girls)
7	Heavy Equip.	16	45.8	10.6	48.9	11.9	
8	Food	29	40.6	9.1	43.3	9.6	
9	Representative	3	44.7	7.5	60.6	2.1	(all boys)
	Significance of Differences:	F = 3.22 df 9,631 p = .0008			F = 2.14 df 9,631 p = .025		

Table 23 Means and Standard Deviations for SATV and M for Special Occupational Subgroups, by Sex

Subgroup	N	SATV Mean	SATV Std Dev.	SATM Mean	SATM Std Dev.
For Entire Population	641	45.8	10.3	49.1	10.3
Not Classified					
Boys	208	45.0	11.2	52.3	11.3
Girls	233	45.3	9.4	46.1	8.6
Contractor					
Boys	16	47.7	13.8	51.9	9.8
Girls	7	47.0	11.1	48.5	7.0
Carpenter					
Boys	15	43.6	11.7	51.4	11.0
Girls	16	47.6	8.1	47.9	10.7
Decoration					
Boys	12	45.1	12.4	46.7	9.5
Girls	13	47.8	9.7	46.6	9.4
Engineer					
Boys	22	49.7	7.1	54.8	8.0
Girls	32	48.8	9.3	49.1	8.1
Science Design					
Boys	6	58.2	12.2	58.5	13.7
Girls	17	50.8	9.6	49.6	11.5
Writing					
Girls	3	54.9	2.5	50.9	6.0
Heavy Equip.					
Boys	10	45.5	10.4	50.7	11.2
Girls	6	46.3	11.9	45.9	13.5
Food					
Boys	14	41.2	7.8	46.8	11.3
Girls	15	40.1	10.5	40.1	6.7
Representative					
Boys	3	44.7	7.5	60.6	2.1

ANOVA Special Occupational Subgroups

An analysis of means was also done for the nine Special Occupation subgroups. Excluding the unclassified subjects (N = 441), there were 200 cases.

The number of cases per subgroup ranged from 3 to 54, with a mean of 22.2. The mean SAT-V score for the classified cases (47.01) was substantially higher than for the unclassified remainder (45.3). The range of standard deviation was wide, probably due to small numbers of cases.

The ANOVA indicates a significant difference between the effects of special occupational subgroups (including the unclassifieds) on SAT V scores (p = .008).

The means for the classifieds and unclassifieds on SAT M are similar (49.0 and 49.2).

The ANOVA indicates a significant difference in SAT M scores for the special occupational subgroups (including the unclassifieds) (p = .025).

Tables 22 and 23 show the means for SAT V and SAT M for subgroups of fathers' occupations by sex of the subject. Subgroup 6 contained only girls and subgroup 9 all boys. Girls out-performed boys in three subgroups (Carpenters, Decoration, Heavy Equipment) and the unclassifieds. The largest mean difference favoring girls was 4.02 points for Carpenters. The largest difference favoring boys was for Science/Mechanical Design (7.5 points). Again, boys outperformed girls on SAT M in all subgroups.

A second series of ANOVA's was again run to test the relationship of the special occupational subgroups to sex and test scores. The unclassified subgroups were included in the analyses. There were no males in subgroup 6 and no females in subgroup 9.

The ANOVA for sex x father's occupation showed no significant interaction (p = .76), thereby enabling interpretation of the main effects. The joint effects for sex and special occupations of father were significant (p = .002). However, sex did not prove to have a significant effect on SAT-V scores alone (p = .82), while the occupational subgroups were highly significant (p = .001).

Table 24. Analysis of Variance for SAT Verbal, by Sex and Special Occupational Subgroups

Source of Variation	Sum of Squares	DF	Mean Square	F	Signif. of F
Main Effects	2981.908	10	298.191	2.886	0.002
Sex	5.573	1	5.573	0.054	0.816
Spocc	2928.637	9	325.404	3.149	0.001
2-Way Interactions	431.908	7	61.701	0.597	0.758
Sex Spocc	431.908	7	61.701	0.597	0.758
Explained Variance	3413.813	17	200.813	1.944	0.013
Residual Variance	64369.813	623	103.322		
Total	67783.625	640	105.912		

The multiple classification analysis showed that sex accounted for only .0009 of the variation in test scores while special occupation accounted for .0441 of the variance.

Table 25. Multiple Classification Analysis for SAT Verbal by Sex and Special Occupational Subgroup.

Grand Mean = 45.78

Variable & Category	N	Unadjusted Dev'n	Unadjusted Eta	Adjusted for Independents Dev'n	Adjusted for Independents Beta
Sex					
Male	297	-0.31		-0.10	
Female	344	0.27		0.09	
			0.03		0.01
Special Occupational Subgroup					
Remainder of Cases	441	-0.58		-0.58	
Contractor	16	1.51		1.51	
Carpenter	31	-0.13		-0.13	
Decoration	25	0.71		0.71	
Engineer	54	3.42		3.41	
Science/Tool Designer	23	6.96		6.93	
Technical Writer	3	9.08		9.00	
Heavy Equip. Operator	16	0.01		0.04	
Food Worker	29	-5.18		-5.18	
Company Representative	3	-1.12		-1.01	
			0.21		0.21
Multiple R Squared					0.044
Multiple R					0.210

On SAT M, the Company Representative subgroup had the highest mean (60.6), while Decoration was lowest (46.7). Boys outperformed girls across all subgroups except Technical Writers, which had only girls.

The ANOVA for sex by occupational subgroups showed no significant interaction for SAT M (p = .84) thereby allowing for interpretations of main effects. The joint effects (p = .000), as well as the main effects for both sex (p = .000) and special occupational subgroup (p = .007) were all significant. These findings indicate that both variables are important factors in the interpretation of SAT scores for students in these subgroups. Males outperform females while certain occupational subgroups outscore others by significant amounts.

Table 26. Analysis of Variance for SAT Mathematics by Sex and Special Occupational Subgroups

Source of Variation	Sum of Squares	DF	Mean Square	F	Signif. of F
Main Effects	7193.000	10	719.300	7.374	0.000
Sex	5174.066	1	5174.066	53.042	0.000
Spocc	2226.504	9	247.389	2.536	0.007
2-Way Interactions	337.113	7	48.159	0.494	0.839
Sex Spocc	337.115	7	48.159	0.494	0.839
Explained Variance	7530.113	17	442.948	4.541	0.000
Residual Variance	60771.387	623	97.546		
Total	68301.500	640	106.721		

The multiple classification shows that sex accounts for .0729 of the variance in SAT M scores, while the occupational subgroup variable accounts for .0289, and the two combined account for .105 of the variance. It can be seen for the sex variable that males (eta = 3.00) are a more powerful factor than are the females (eta = -2.59).

Table 27. Multiple Classification Analysis for SAT Mathematics by Sex and Special Occupational Subgroups.

Grand Mean = 49.07

		Unadjusted		Adjusted for Independents	
Variable & Category	N	Dev'n	Eta	Dev'n	Beta
Sex					
Male	297	3.00		3.09	
Female	344	-2.59		-2.67	
			0.27		0.28
Special Occupational Subgroup					
Remainder of Cases	441	-0.08		-0.13	
Contractor	16	0.96		1.11	
Carpenter	31	0.53		0.41	
Decoration	25	-2.40		-2.50	
Engineer	54	2.34		2.66	
Science/Tool Designer	23	2.89		4.05	
Technical Writer	3	1.83		4.50	
Heavy Equip. Operator	16	-0.19		-1.12	
Food Worker	29	-5.72		-5.83	
Company Representative	3	11.57		8.48	
			0.17		0.18
Multiple R Squared					0.105
Multiple R					0.325

PART III

ANALYSIS OF BIVARIATE MEANS ON THE SAT V x M PLANE

The analyses in Part II have looked at SAT V and SAT M as single variables, and thus reflect "level of abstractness" and its correlates "level of occupation" and social class. These well-established correlations are of little help in classifying occupations for their effect on cognitive styles, however, as styles cut across levels. Also, individual sex-by-subgroup interactions appear on analysis of bivariate means on the SAT V x M plane.

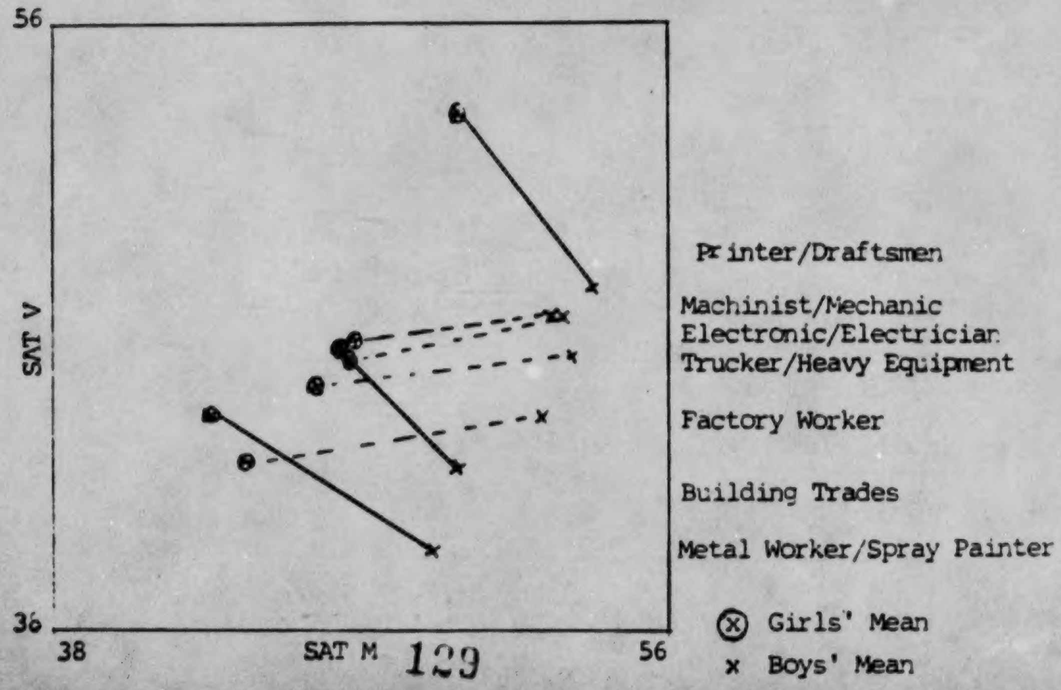
Technology Categories

When the relation of sex to father's occupational categories is looked at in bivariate terms, two clusters in a more complex interaction can be seen (Figure 4). As before, means for boys are quite uniformly higher than for girls on SAT M in all categories; and the means for girls on SAT V are also lower than those for boys, by fairly uniform amounts, on four of the seven categories so that the boy/girl profile for each of these categories will vary from the others only in level of abstractness. Three categories, however, appear to enhance, rather than depress, verbalism in girls. These categories which show means for SAT V higher for girls than boys (and by substantial amounts) are Building Trades, Metal/Spray Paint Work, and Printer/Draftsman.

Technology Subgroups

In more detail, girls' means for SAT V were above those of boys in the Carpenter and Heavy Equipment Operator subgroups, and for both SAT V and/or for the Decorator subgroup.

Figure 4. Location of Bivariate Means on the SAT V x M Plane, by Sex, for Technology Categories



SUMMARY

The findings from analysis of variance for the special Technology subgroups are similar to those for the Technology categories:

On SAT V, fathers' occupation is again the critical determining factor. Both sex and fathers' occupation affected SAT M results, with male sex stronger than female.

Some Technology occupations were stronger than others, also. For SAT V, these were Science/Tool Designer (eta = 6.96) and Technical Writers (eta = 9.08), while Food Workers were the least (eta = 5.18). For SAT M the most powerful factor was the Company Representative group (eta = 11.57) while Food Workers were again least (eta = 5.72).

As a precautionary measure, separate ANOVA's were performed using just the classified special subgroup cases. The exclusion of the unclassified group meant a loss of 68.8% of the total sample. The mean for the unclassified group was 45.2, whereas the mean for the classified subgroups was 47.07.

The ANOVA for SAT-V gave the same results as before. The multiple classification results indicate that the sex variable contributed only .0025 of the variance of test scores, while special occupation accounts for .1225 and together they accounted for .12. These general findings are similar to those when the unclassified cases are included in the analyses. Though in this case, more variance is accounted for (.12) than when the unclassifieds are included (.044). Again, females (eta = .46) show more disturbance than males (eta = -.57).

The results for SAT-M were also comparable to those obtained with the unclassified group in the ANOVA with all effects highly significant.

The multiple classification was also similar. Sex accounted for .0441 of the variance in test scores while the occupational variable accounted for .0961 and the two combined accounted for .148 of SAT-M test scores. Males (eta = 2.37) were more of a disturbing factor than females (eta = -1.9).

Two of the nine subgroups have only three cases, and these are all boys in one case and all girls in the other. The unclassified group of 441 cases shows SAT V very slightly higher for girls, while SAT M is much higher for boys.

Girls V+

Table 28. Comparison of Unclassified Technology Means to Means for All Occupational Groups Combined.

	SAT V				SAT M				N	
	Boys		Girls		Boys		Girls		Boys	Girls
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
All Occupations*	46	11.7	47	10.7	53	11.5	47	10.8	498	446
Unclassified Technology Cases	45.0	11.2	45.3	9.4	52.3	11.3	46.1	8.6	208	233

*From previous study (Belz 1971)

The Heavy Equipment and Carpenter categories follow this pattern. They would seem to be similar to the Technology Group as a whole in that verbalism for girls does not seem particularly depressed by these special occupations.

Table 29. Means for Subgroups where Girls' SAT Verbal Means are as high as Boys'

	SAT V				SAT M				N	
	Boys		Girls		Boys		Girls		Boys	Girls
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
Heavy Equip.	45.5	10.4	46.3	11.9	50.7	11.2	45.9	13.5	10	6
Subgroup Truckers/ Heavy Equip.	46.6	10.6	45.7	7.9	53.8	10.1	46.1	6.9	30	36
Carpenters	43.6	11.7	47.6	8.1	51.4	11.0	47.9	10.7	15	16
Subgroup Building Trades	43.1	12.5	46.7	10.3	49.3	11.8	47.0	9.7	64	71
Unclassified Technology	45.0	11.2	45.3	9.4	52.3	11.3	46.1	8.6	208	233

The Decoration occupations (25 cases including Carpetlayers, Drapery Cleaners, etc.) differ in profile from all other groups in that almost no sex difference in shown for SAT M, while SAT V is higher for girls. This occupation would seem to belong to a group other than Technology. Arts and Entertainment seems more appropriate (Roe, Table 7).

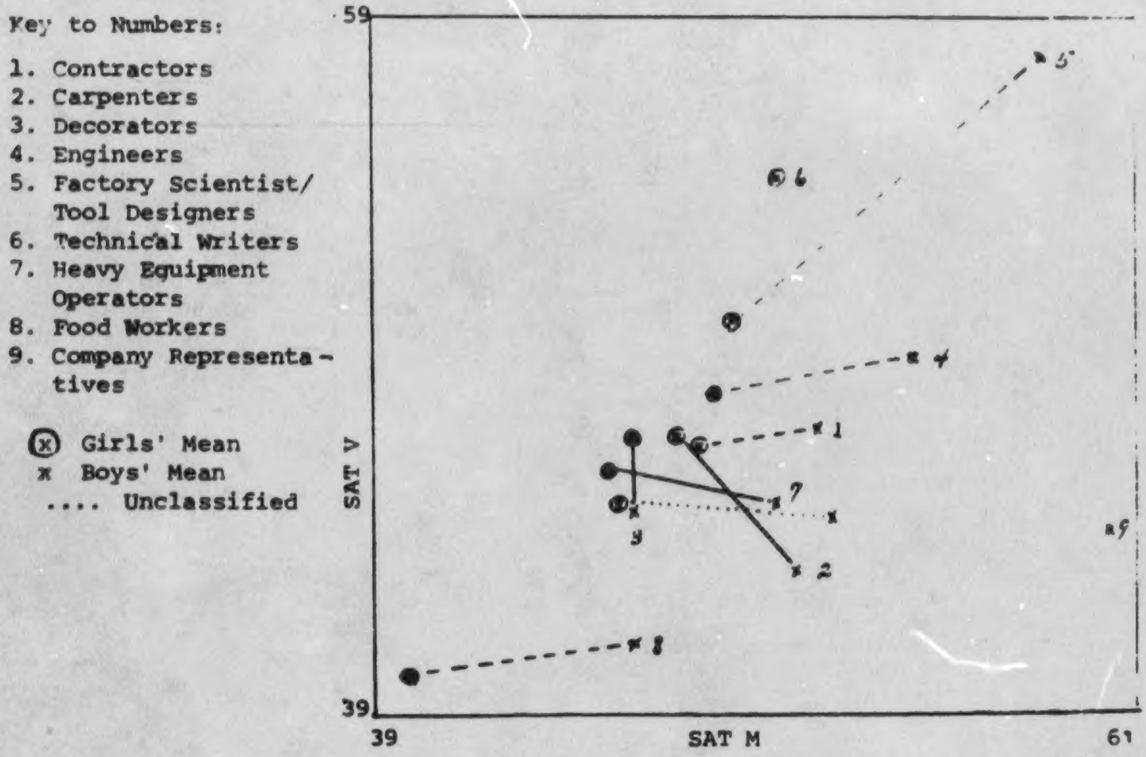
Table 30. Means for the Decorator Subgroup

	SAT V				SAT M					
	Boys		Girls		Boys		Girls		Boys	Girls
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
Decorators	45.1	12.4	47.8	9.7	46.7	9.5	46.6	9.4	12	13

Girls V-M-

Girls in the remaining four subgroups show the same V-M-pattern in relation to boys that was evident in some categories (Figure 5). One of these is Scientific/Mechanical Designer (with 23 cases including Geologists, Chemists, Tool Designers, etc.). This occupation shows little difference between SAT V and SAT M for either boys or girls, but the girls are about 10 points lower on both than the boys. The average profile for both sexes combined resembles that for the General Culture more than the Technology Group (Roe, Table 7).

Figure 5. Location of Bivariate Means on the SAT V x M Plane, by Sex, for Special Technology Subgroups



Engineers and Contractors seem to follow the general pattern of verbal expression for girls that was noted for Building Trades, Electronics, Mechanics, Truckers and Factory Workers and should probably remain in the Technology Group. Food Workers show the same boy/girl profile as the Technological Group, but at a markedly lower level of abstractness on both V and M for both sexes. In terms of previous studies they appear more like the Personal Service Group (Roe, Table 7) than any other.

Table 31. Means for the Food Worker subgroup compared to Means for the Personal Service Group.

	SAT V		SAT M		N
	Mean	SD	Mean	SD	
Food Workers	40.6	9.1	43.3	9.6	29
Personal Service Group *	41.5	12.5	44.3	12.6	46

*From previous study (Belz 1971)

The small cluster of Technical Writers seems more appropriately placed in the General Culture Group (Roe, Table 7) with other writers, and Technological "Company Representatives" appear to belong in the Business and Government Organization Group rather than Sales (which the label might suggest).

Table 32. Means for Subgroups were Girls' SAT Verbal Means are lower then Boys'.

	SAT V				SAT M				N	
	Boys		Girls		Boys		Girls		Boys	Girls
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
Scientific/ Mechanical Designer, by sex.	58.2	12.2	50.9	9.6	58.5	13.7	49.6	11.5	6	17
	Mean	SD			Mean	SD			N	
Scientific/ Mechanical Designer, total	52.7	10.5			52.0	12.4			23	
General Culture Group *	54.3	11.1			54.7	10.6			51	

* Previous study (Belz 1971)

PART IV

GENERAL FINDINGS

The Discriminant Analysis of Special Occupational Subgroups showed that both SAT V and SAT M discriminated significantly among the subgroups. The same was true for girls alone, but with SAT V a stronger factor than SAT M, but the subgroups did not differ significantly on either variable for boys. The canonical analysis showed significant discriminating power both before and after the first function was removed. For boys alone the analysis only showed significant discriminating power before the first function was removed, and the canonical analysis was not significant for girls. The special subgroups thus appeared to be fairly heterogeneous, in support of empirical evidence that some may fit better in occupational groups other than Technology.

ANOVA studies showed (1) significant differences in the effects of different categories and subgroups of fathers' technological occupations on SAT V and SAT M scores and, (2) significant differences in effects of sex on SAT M scores in all categories and subgroups. Nearly all technological occupations of fathers in the study seemed to give strong support for the growth of skills reflected in SAT M scores for boys, but not for girls. However, these occupations supported growth of the aptitudes reflected in SAT V in only three out of the seven categories for girls, and three, or possibly four, of the nine subgroups, again for girls. In the remaining categories and subgroups, both SAT V and SAT M scores for girls were below those for boys, showing less support for abstract growth of either kind in girls.

Application of Findings to the Learning Problems Project

Some subgroups were apparently more similar to occupational groups other than Technology and should be reclassified appropriately. Except for those subgroups, no clear-cut discriminations between categories within the Technology Group could be defined.

Obviously, the removal of some subgroups from the Technology group, entirely, altered its composition. So further analysis was made before conclusions about the relation of the fathers' occupations that remain to the growth of abstract mental skills in the sample of cases used here can be drawn.

Finally, from previous studies, a revision of the "gun carrying" group also seemed warranted. This group was added to Roe's list because of reports that, as an occupational variable, gun-carrying affects the self esteem of sons (Rosenberg, 1965). However, this group was ambiguous in its relation to aptitude test scores; i.e., cases at low status levels showed a V+ style, while cases at high status levels tended to be M+. Hence soldiers, policemen, guards, non-coms, etc., should be returned to the Personal Service Group from which they were drawn, and officers should be in Business/Government Organization.

A supplementary study was done after the 93 cases were removed to determine whether the refined categories which resulted showed differences among themselves.

SUPPLEMENT

As a supplement to work on the relation between Technology occupations of fathers and scores on the Verbal and Mathematics sections of the Scholastic Aptitude Test (SAT), analyses were repeated after the removal of some 93 cases which seemed mis-classified in the earlier work. By and large, the effect of removal was to sharpen the previous findings.

Analyses of Means

SAT Verbal: There were no substantial differences in the means for the Technology categories after cases were deleted. The grand mean decreased minimally from 45.8 to 45.66, and the standard deviation decreased from 10.3 to 10.18. As before, the one-way ANOVA showed a significant difference among the categories for SAT V (F = 2.98, df = 6, P = .007), and the patterning of sex differences was also the same.

SAT Mathematics: A substantial change in the SAT M mean for the Factory Work category occurred after deletions. The mean for males went from 51.9 to 53.7, and for females, from 44.3 to 45.7. However, the grand mean for all categories increased minimally (49.1 to 49.3), and there was almost no decrease in the standard deviation (10.3 to 10.24). As before, the one-way ANOVA showed no significant difference among the Technology categories on SAT M (F = 1.87, df = 6, 554, P = .085). As before, the means for boys were higher than girls' in all categories.

Bivariate means: The same three stylistically different categories appeared when bivariate means were plotted, as before, namely, Building Trades, Metal Work/Spray Painters, and Printers/Draftsmen. The SAT V means for girls were higher than those for boys in these categories only, producing a complex interaction with sex. Thus, the stylistic effects of these categories seem similar, though the Printer/Draftsman category is at a more abstract level (see Figure 1-S). The remaining four categories seem to cluster even more tightly than before.

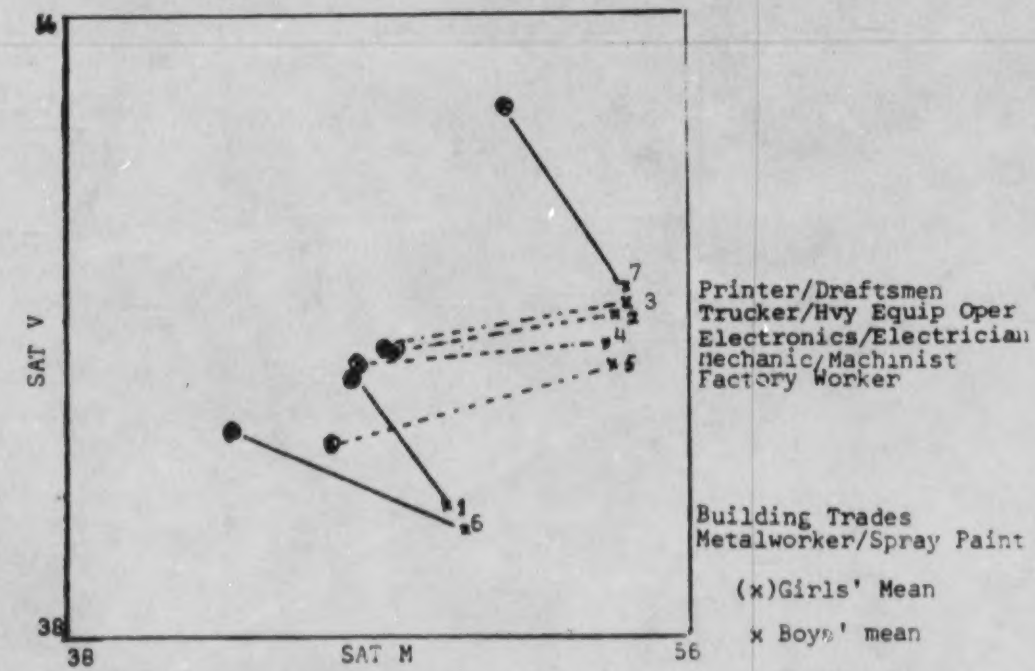
Table 1-S. SAT Verbal and Mathematics Means, by Occupational Category

	Total Cases				
	V			M	
Category	N	M	SD	M	SD
Building Trades	114	43.7	10.9	47.5	10.5
Electronics/Electrician	154	46.6	10.2	50.2	10.1
Trucker/Heavy Equip't	82	47.0	9.2	49.8	10.1
Mechanic/Machinist	65	46.3	9.2	49.7	9.3
Factory Worker	80	45.0	10.0	49.9	11.0
Metalwork/Spray Painter	42	42.5	10.1	46.2	10.8
Printer/Draftsman	24	50.6	8.3	52.3	7.7
Total	561	43.7	10.9	49.3	10.2
	F= 2.98 P= .007 df 6, 554			F= 1.67 P= .08	
	R^2 = .0009			R^2 = .0008	

Table 2-S. SAT V and M Means, by Sex, for Fathers' Occupational Category

Cat.	SAT V						SAT M				Differences Boys-Girls	
	Boys			Girls			Boys		Girls			
	N	M	SD	N	M	SD	M	SD	M	SD	V	M
Bldg.	55	41.9	11.6	59	45.4	10.1	48.9	11.7	46.2	9.2	-2.5	+2.7
Elec.	70	47.3	11.5	84	46.1	9.5	53.7	11.4	47.3	8.0	+1.2	+6.4
Truck	33	47.6	9.4	49	46.1	9.2	54.0	10.1	47.0	9.2	+1.5	+7.0
Mech.	30	46.6	10.6	35	46.0	7.9	53.8	10.1	46.3	7.0	+0.6	+7.5
Fact.	42	46.0	9.9	38	43.8	10.2	53.7	9.0	45.7	11.5	+2.2	+6.0
Metal	22	41.1	11.3	20	44.0	8.5	49.4	13.0	42.7	6.5	-2.9	+6.7
Print	12	48.1	7.9	12	53.2	8.3	54.1	8.2	50.5	6.9	-5.1	+3.6
Total	264	45.4		297	45.9		52.4		46.9		-0.5	+5.9

Figure 1-S. Location of Bivariate Means on the SAT V x M Plane, by Sex for Fathers' Technological Occupations



In addition to the clustering of categories in terms of their relation to the SAT Verbal scores of girls, the patterning of SAT V in relation to SAT M was analyzed through a correlation study. Here the Technology I and Technology II clusters from the earlier study merged. The correlation coefficients for all but one Technology I category ranged from .64 to .69, while those for the two Technology II categories were .65 and .48. Thus no stylistic difference between the clusters was evident.

Table 3-S. Correlations between SAT V and M for Fathers' Technological Occupations

Technology I	r	R^2	Error	P	N	Technology II	r	R^2	Error	P	N
(1) Building Trades	.69	.48	7.66	.000	114	(4) Mechanic/Mach.	.65	.43	7.66	.000	65
(2) Electron/Electr.	.66	.44	7.63	.000	154	(7) Printer/Draft.	.48	.23	6.85	.008	24
(3) Trucker/HvyEquip	.54	.29	8.59	.000	82						
(5) Factory Worker	.66	.44	8.25	.000	80						
(6) Metal/SprayPtr	.64	.41	8.38	.000	42						

Total r= .64

Two-way analyses of variance:

For SAT V, the two-way ANOVA showed a significant joint effect of sex and father's occupation, but the main effect for sex was not significant (P = .71). There was a highly significant main effect for occupational categories however (P = .008). The sex-by-occupation interaction was not significant (P = .28), apparently because only girls were differentially affected. The overall mean for boys was 45.4, and that for girls was 45.9. Again, Metalworker/Spray Painters' children were at the least abstract level, while Printer/Draftsmen's children were at the highest.

Table 4-S. Analysis of Variance in SAT V, by Sex and Fathers' Occupation.

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
MAIN EFFECTS	1826.072	7	260.867	2.572	0.013
SEX	13.872	1	13.872	0.137	0.712
FAOCC	1797.351	6	299.558	2.954	0.008
2-WAY INTERACTIONS	758.923	6	126.487	1.247	0.280
SEX FAOCC	758.923	6	126.487	1.247	0.280
EXPLAINED	2584.996	13	198.846	1.961	0.022
RESIDUAL	55476.414	547	101.419		
TOTAL (N= 561)	58061.410	560	103.681		

The multiple classification analysis showed a minimal decrease in the variance on SAT V accounted for by sex (.0005), while the amount related to fathers' occupation increased by .0068. The total for both was now Eta^2 = .031.

Table 5-S. Multiple Classification for SAT V by Sex and Fathers' Occupation

GRAND MEAN = 45.66

VARIABLE	CATEGORY	N	UNADJUSTED DEV'N	UNADJUSTED ETA	ADJUSTED FOR INDEPENDENTS DEV'N	ADJUSTED FOR INDEPENDENTS BETA
SEX						
	Male	264	-0.24		-0.17	
	Female	297	0.21		0.15	
				0.02		0.02
FAOCC						
	Building Trades	114	-1.97		-1.96	
	Electronics/Electrician	154	0.98		0.97	
	Truckers/Heavy Equip't	82	1.30		1.28	
	Mechanic/Machinist	65	0.61		0.63	
	Factory Worker	80	-0.70		-0.69	
	Metalwork/SprayPainter	42	-3.21		-3.19	
	Printer/Draftsman	24	4.95		4.96	
				0.18		0.18
MULTIPLE R SQUARED						0.031
MULTIPLE R						0.177

For SAT M, the two-way ANOVA showed a significant main effect for sex (P = .000). This incredibly large F-ratio reflects the extent to which boys with fathers in Technology occupations outscore girls on SAT M (boys' mean = 52.4; girls' mean = 46.5). The main effect for fathers' occupational categories was significant also (P = .034). The sex-by-occupation interaction was not significant, however. Again, children of Printer/Draftsmen were highest, while those of Metalworker/Spray Painters were lowest.

Table 6-S. Analysis of Variance in SAT M by Sex and Fathers' Occupation

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
MAIN EFFECTS	6111.844	7	873.120	9.147	0.000
SEX	4947.594	1	4947.594	51.829	0.000
FAOCC	1312.421	6	218.737	2.291	0.034
2-WAY INTERACTIONS	473.215	6	78.869	0.826	0.550
SEX FAOCC	473.217	6	78.870	0.826	0.550
EXPLAINED	6585.059	13	506.543	5.306	0.000
RESIDUAL	52216.117	547	95.459		
TOTAL (N = 561)	58801.176	560	105.002		

The multiple classification analysis shows a little increase in the amount of variance in SAT M scores accounted for by sex (.011), and also by fathers' occupation (.0033) and in the total (.011).

Table 7-5. Multiple Classification SAT M by Sex and Fathers' Occupation

```
GRAND MEAN =     49.29
                                                         ADJUSTED FOR
                                           UNADJUSTED    INDEPENDENTS
VARIABLE   CATEGORY                   N    DEV'N  ETA    DEV'N   BETA

SEX
           Male                     264     3.10          3.16
           Female                   297    -2.76         -2.81
                                                  0.29            0.29

FAOCC
           Building Trades          114    -1.77         -1.84
           Electronics/Electrician  154     0.91          1.00
           Truckers/Heavy Equip't    62     0.54          0.95
           Mechanic/Machinist        65     0.43          0.86
           Factory Worker            80     0.60          0.28
           Metalworks/SprayPainter   42    -3.09         -3.41
           Printer/Draftsman         24     2.98          2.80
                                                  0.14            0.15

MULTIPLE R SQUARED                                               0.104
MULTIPLE R                                                       0.322
```

Thus, the previous findings of a significant effect on SAT V of fathers' Technological Occupation, and of sex on SAT M, were slightly intensified by the removal of subgroups of ambiguous cases.

Discriminant Analysis

All cases: There was a very slight increase in discrimination of Technology categories on both SAT V (P = .008 to P = .007) and on SAT M (P = .10 to P = .085) after removal of ambiguous subgroups. The canonical discriminant power now approached significance before any function was removed (P = .09 to P = .057).

Males: Again, categories for males were significantly discriminated on SAT V (P = .04 to P = .03), but not on SAT M (P = .13 to P = .12).

Females: Categories for females now showed no significant discrimination across fathers' occupational categories (P = .05 decreased to P = .12); and as before, there was none for SAT M (P = .11 decreased to P = .26).

For all cases, only two categories had 50% or more of cases "correctly" classified as members of that group. These were Metal/Spray Painters and Printer/Draftsmen, the lowest and the highest, while other groups overlapped on them by about 35%, on the average. The total number of cases correctly classified for the total sample was only 10.2%. The number for males was 16.7%, while 13.5% of females were correctly classified by fathers' occupational category. Thus, no clusters of categories were identified on this analysis, and the function which discriminates appears to be "level of abstractness" of the SAT scores.

Table 8-S. Distribution of Overlapping Categories, in percents.

	Metal	Printer	Factory	Others
Metal/Spray Paint	50.0	33.3	14.3	2.4
Printer/Draft	12.5	54.2	16.7	16.7
Factory Work	36.3	28.8	22.5	16.9
Others	34.6	37.3	20.6	

Conclusions:

Within the present sample, the study of means showed that some technological occupations of fathers interacted to depress verbal development in girls, as compared to boys, while others seemed to enhance it. All the Technology occupations enhanced mathematical development in boys more than verbal development, but not in girls.

The discriminant analyses seemed to differentiate between effects of the Technology categories in terms of the level of abstractness of the children's mental skills. Thus, for sexes combined, the categories seem homogeneous in their effect on children's mental skills in terms of Roe's (1959) concept of an occupational "group." I.e., a "group" is said to share values and interests at all job levels from those requiring externally-oriented physical activity to those at desk-work and decision-making levels.

Figure 2-S. Location of Centroids, Canonical Discriminant Functions

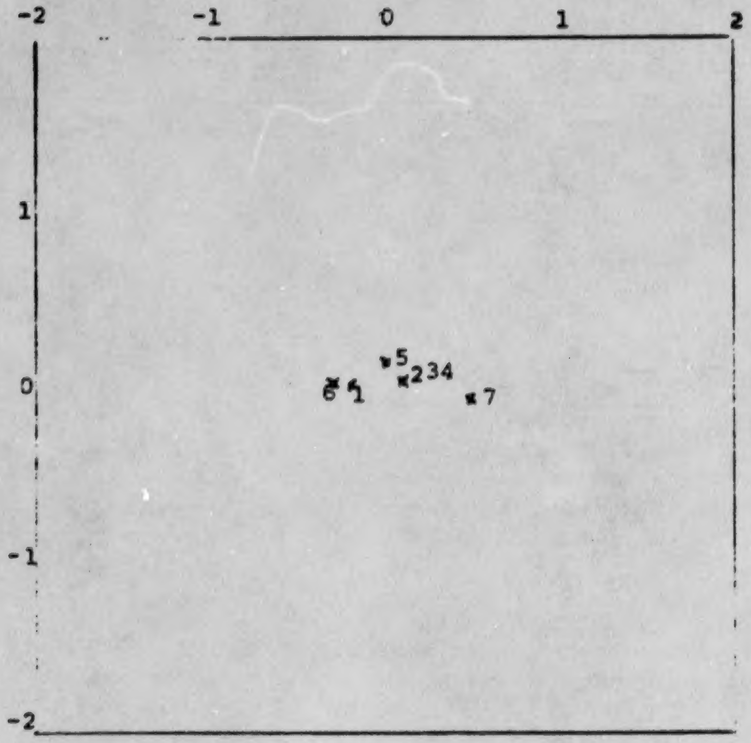


Table 9-S Classification Results - Discriminent Analysis - All Cases

TABLE 9-S

CLASSIFICATION RESULTS - DISCRIMINANT ANALYSIS - ALL CASES

ACTUAL GROUP	NO. OF CASES	PREDICTED GROUP MEMBERSHIP G1	G2	G3	G4	G5	G6	G7
BUILDING TRADES	114	2 1.8%	1 0.9%	4 3.5%	0 0.0%	18 15.8%	52 45.6%	37 32.5%
ELECTRONICS	154	2 1.3%	2 1.3%	11 7.1%	1 0.6%	35 22.7%	50 32.5%	53 34.4%
TRUCKING/Heavy Equip.	82	2 2.4%	0 0.0%	1 1.2%	0 0.0%	21 25.6%	24 29.3%	34 41.5%
MECHANIC/MACHINIST	65	2 3.1%	1 1.5%	8 12.3%	0 0.0%	12 18.5%	20 30.8%	22 33.8%
FACTORY WORKER	80	2 2.5%	2 2.5%	6 7.5%	0 0.0%	18 22.5%	29 36.3%	23 28.8%
[illegible]/Spray Pnt.	42	0 0.0%	0 0.0%	1 2.4%	0 0.0%	6 14.3%	21 50.0%	14 33.3%
PRINTER/DRAFTSMAN	24	2 8.3%	0 0.0%	2 8.3%	0 0.0%	4 16.7%	3 12.5%	13 54.2%

PERCENT OF "GROUPED" CASES CORRECTLY CLASSIFIED: 10.16%

Table 10-S Classification Results - Discriminant Analysis - Males

```
TABLE 10-S
CLASSIFICATION RESULTS - DISCRIMINANT ANALYSIS - MALES

                         NO. OF    PREDICTED GROUP MEMBERSHIP
   ACTUAL GROUP          CASES       91       92       93       94       95       96       97
--------------------     ------   -------- -------- -------- -------- -------- -------- --------

   BUILDING TRADES         55         18        0        1        0        7       17       12
                                   32.7%     0.0%     1.8%     0.0%    12.7%    30.9%    21.8%

   ELECTRONICS/ELECTRICIAN 70         13        3        5        1       11       12       25
                                   18.6%     4.3%     7.1%     1.4%    15.7%    17.1%    35.7%

   TRUCKING/HEAVY EQUIP.   33          7        0        3        1        7        4       11
                                   21.2%     0.0%     9.1%     3.0%    21.2%    12.1%    33.3%

   MECHANIC/MACHINIST      30          6        0        0        0        6        7       11
                                   20.0%     0.0%     3.3%     0.0%    20.0%    23.3%    36.7%

   FACTORY WORKER          42         11        1        2        0        7        8       13
                                   26.2%     2.4%     4.8%     0.0%    16.7%    19.0%    31.0%

   METALWORKER/SPRAY PNT.  22          5        0        2        0        3        7        5
                                   22.7%     0.0%     9.1%     0.0%    13.6%    31.8%    22.7%

   PRINTER/DRAFTSMAN       12          2        0        1        0        3        0        6
                                   16.7%     0.0%     8.3%     0.0%    25.0%     0.0%    50.0%

PERCENT OF "GROUPED" CASES CORRECTLY CLASSIFIED:  16.67%
```

Table 11-S Classification Results - Discriminant Analysis - Females

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TABLE 11-S
CLASSIFICATION RESULTS - DISCRIMINANT ANALYSIS - FEMALES

                         NO. OF    PREDICTED GROUP MEMBERSHIP
   ACTUAL GROUP          CASES       91       92       93       94       95       96       97
--------------------     ------   -------- -------- -------- -------- -------- -------- --------

   BUILDING TRADES         59          1        3        1        2       14       17       21
                                    1.7%     5.1%     1.7%     3.4%    23.7%    28.8%    35.6%

   ELECTRONICS/ELECTRICIAN 84          0       11        2        4       22       21       24
                                    0.0%    13.1%     2.4%     4.8%    26.2%    25.0%    28.6%

   TRUCKERS/HEAVY EQUIP.   49          1        8        0        0       10       12       18
                                    2.0%    16.3%     0.0%     0.0%    20.4%    24.5%    36.7%

   MECHANIC/MACHINIST      35          0        1        2        4       11        9        8
                                    0.0%     2.9%     5.7%    11.4%    31.4%    25.7%    22.9%

   FACTORY WORKER          38          0        6        0        3        6       15        8
                                    0.0%    15.8%     0.0%     7.9%    15.8%    39.5%    21.1%

   METALWORKER/SPRAY PNTER. 20         0        0        0        0        3       11        6
                                    0.0%     0.0%     0.0%     0.0%    15.0%    55.0%    30.0%

   PRINTER/DRAFTSMAN       12          1        1        1        0        1        1        7
                                    8.3%     8.3%     8.3%     0.0%     8.3%     8.3%    58.3%

PERCENT OF "GROUPED" CASES CORRECTLY CLASSIFIED:  13.47%
```

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APPENDIX B

Description of Background Variables

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Appendix B.

TABLE 1.

TRIX I

l	MATRIX I "CLEAR CASES" (360 cells) Page 1.	Cell Freq.	Ethnic Total	Ordinal Total	Sex Total	Ethnic Frequencies from other Matrices Occ.Change	No Father
.	Oldest N. Asian boy with Art/Entertainer father	0	3			0	0
2.	Oldest N. Asian boy with Personal Service father	1					
.	Oldest N. Asian boy with Business Contact father	0					
.	Oldest N. Asian boy with General Culture father	1					
.	Oldest N. Asian boy with Science father	0					
.	Oldest N. Asian boy with Technology (sex-type I) father	0					
7.	Oldest N. Asian boy with Technology (sex-type II) father	0					
.	Oldest N. Asian boy with Business/Government father	1					
.	Oldest N. Asian boy with Outdoor father	0					
10.	Oldest N. Asian boy with permanently Unemployed father	0					
11.	Oldest N. European boy with Art/Entertainer father	4	92			34	5
12.	Oldest N. European boy with Personal Service father	13					
13.	Oldest N. European boy with Business Contact father	6					
14.	Oldest N. European boy with General Culture father	6					
15.	Oldest N. European boy with Science father	3					
16.	Oldest N. European boy with Technology (sex-type I) father	36					
17.	Oldest N. European boy with Technology (sex-type II) father	14					
18.	Oldest N. European boy with Business/Government father	9					
19.	Oldest N. European boy with Outdoor father	1					
20.	Oldest N. European boy with permanently Unemployed father	0					
21.	Oldest Hispanic boy with Art/Entertainer father	0	28			15	2
22.	Oldest Hispanic boy with Personal Service father	5					
23.	Oldest Hispanic boy with Business Contact father	1					
24.	Oldest Hispanic boy with General Culture father	0					
25.	Oldest Hispanic boy with Science father	0					
26.	Oldest Hispanic boy with Technology (sex-type I) father	7					
27.	Oldest Hispanic boy with Technology (sex-type II) father	7					
28.	Oldest Hispanic boy with Business/Government father	3					
28.	Oldest Hispanic boy with Outdoor father	4					
30.	Oldest Hispanic boy with permanently Unemployed father	1					
31.	Oldest S. Asian boy with Art/Entertainer father	0	0			0	0
32.	Oldest S. Asian boy with Personal Service father	0					
33.	Oldest S. Asian boy with Business Contact father	0					
34.	Oldest S. Asian boy with General Culture father	0					
35.	Oldest S. Asian boy with Science father	0					
36.	Oldest S. Asian boy with Technology (sex-type I) father	0					
37.	Oldest S. Asian boy with Technology (sex-type II) father	0					
38.	Oldest S. Asian boy with Business/Government father	0					
39.	Oldest S. Asian boy with Outdoor father	0					
40.	Oldest S. Asian boy with permanently Unemployed father	0					
41.	Oldest S. European boy with Art/Entertainer father	0	4			5	0
42.	Oldest S. European boy with Personal Service father	3					
43.	Oldest S. European boy with Business Contact father	0					
44.	Oldest S. European boy with General Culture father	0					
45.	Oldest S. European boy with Science father	0					
46.	Oldest S. European boy with Technology (sex-type I) father	0					
47.	Oldest S. European boy with Technology (sex-type II) father	0					
48.	Oldest S. European boy with Business/Government father	1					
49.	Oldest S. European boy with Outdoor father	0					
50.	Oldest S. European boy with permanently Unemployed father	0					
51.	Oldest Black boy with Art/Entertainer father	1	9			4	2
52.	Oldest Black boy with Personal Service father	4					
53.	Oldest Black boy with Business Contact father	0					
54.	Oldest Black boy with General Culture father	0					
55.	Oldest Black boy with Science father	1					
56.	Oldest Black boy with Technology (sex-type I) father	2					
57.	Oldest Black boy with Technology (sex-type II) father	0					
58.	Oldest Black boy with Business/Government father	0					
59.	Oldest Black boy with Outdoor father	1					
60.	Oldest Black boy with permanently Unemployed father	0					
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~~MATRIX I~~

Cell #	MATRIX I "CLEAR CASES" (360 cells) Page 2.	Cell Freq.	Ethnic Total	Ordinal Total	Sex Total	Ethnic Frequencies from other Matrices Occ.Change	Ethnic Frequencies from other Matrices No Fathe
61.	Middle N. Asian boy with Art/Entertainer father	0	1			1	0
62.	Middle N. Asian boy with Personal Service father	0					
63.	Middle N. Asian boy with Business Contact father	0					
64.	Middle N. Asian boy with General Culture father	0					
65.	Middle N. Asian boy with Science father	0					
66.	Middle N. Asian boy with Technology (sex-type I) father	0					
67.	MIddle N. Asian boy with Technology (sex-type II) father	1					
68.	Middle N. Asian boy with Business/Government father	0					
69.	MIddle N. Asian boy with Outdoor father	0					
70.	Middle N. Asian boy with permanently Unemployed father	0					
71.	Middle N. European boy with Art/Entertainer father	8	125			74	6
72.	Middle N. European boy with Personal Service father	16					
73.	MIddle N. European boy with Business Contact father	3					
74.	Middle N. European boy with General Culture father	4					
75.	Middle N. European boy with Science father	1					
76.	Middle N. European boy with Technology (sex-type I) father	49					
77.	Middle N. European boy with Technology (sex-type II) father	27					
78.	Middle N. European boy with Business/Government father	11					
79.	Middle N. European boy with Outdoor father	6					
80.	Middle N. European boy with permanently Unemployed father	0					
81.	Middle Hispanic boy with Art/Entertainer father	2	73			53	5
82.	Middle Hispanic boy with Personal Service father	15					
83.	Middle Hispanic boy with Business Contact father	2					
84.	Middle Hispanic boy with General Culture father	0					
85.	Middle Hispanic boy with Science father	1					
86.	Middle Hispanic boy with Technology (sex-type I) father	14					
87.	Middle Hispanic boy with Technology (sex-type II) father	16					
88.	MIddle Hispanic boy with Business/Government father	4					
89.	Middle Hispanic boy with Outdoor father	17					
90.	Middle Hispanic boy with permanently Unemployed father	2					
91.	Middle S. Asian boy with Art/Entertainer father	0	1			1	0
92.	Middle S. Asian boy with Personal Service father	0					
93.	Middle S. Asian boy with Business Contact father	0					
94.	Middle S. Asian boy with General Culture father	0					
95.	Middle S. Asian boy with Science father	0					
96.	Middle S. Asian boy with Technology (sex-type I) father	0					
97.	Middle S. Asian boy with Technology (sex-type II) father	0					
98.	Middle S. Asian boy with Business/Government father	0					
99.	Middle S. Asian boy with Outdoor father	1					
100.	Middle S. Asian boy with permanently Unemployed father	0					
102.	Middle S. European boy with Art/Entertainer father	0	4			5	0
102.	Middle S. European boy with Personal Service father	1					
103.	Middle S. European boy with Business Contact father	1					
104.	Middle S. European boy with General Culture father	0					
105.	Middle S. European boy with Science father	0					
106.	Middle S. European boy with Technology (sex-type I) father	1					
107.	Middle S. European boy with Technology (sex-type II) father	0					
108.	Middle S. European boy with Business/Government father	1					
109.	Middle S. European boy with Outdoor father	0					
110.	Middle S. European boy with permanently Unemployed father	0					
112.	Middle Black boy with Personal Service father	6	25			33	5
113.	Middle Black boy with Business Contact father	1					
114.	Middle Black boy with General Culture father	1					
115.	Middle Black boy with Science father	0					
116.	Middle Black boy with Technology (sex-type I) father	10					
117.	Middle Black boy with Technology (sex-type II) father	3					
118.	Middle Black boy with Business/Government father	2					
119.	Middle Black boy with Outdoor father	1					
120.	Middle Black boy with permanently Unemployed father	0					
111.	Middle Black boy with Art/Entertainer father	1					
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TRIX I

11 MATRIX I "CLEAR CASES" (360 cells) Page 3.	Cell Freq.	Ethnic Total	Ordinal Total	Sex Total	Ethnic Frequencies from other Matrices Occ.Change	No Father
121. Youngest N. Asian boy with Art/Entertainer father	0	2			1	0
122. Youngest N. Asian boy with Personal Service father	2					
123. Youngest N. Asian boy with Business Contact father	0					
124. Youngest N. Asian boy with General Culture father	0					
125. Youngest N. Asian boy with Science father	0					
126. Youngest N. Asian boy with Technology (sex-type I) father	0					
127. Youngest N. Asian boy with Technology (sex-type II) father	0					
128. Youngest N. Asian boy with Business/Government father	0					
129. Youngest N. Asian boy with Outdoor father	0					
130. Youngest N. Asian boy with permanently Unemployed father	0					
132. Youngest N. European boy with Personal Service father	10	76			45	6
133. Youngest N. European boy with Business Contact father	7					
134. Youngest N. European boy with General Culture father	4					
135. Youngest N. European boy with Science father	2					
136. Youngest N. European boy with Technology (sex-type I) father	30					
137. Youngest N. European boy with Technology (sex-type II) father	12					
138. Youngest N. European boy with Business/Government father	9					
139. Youngest N. European boy with Outdoor father	1					
140. Youngest N. European boy with permanently Unemployed father	0					
142. Youngest Hispanic boy with Personal Service father	2	18			11	3
143. Youngest Hispanic boy with Business Contact father	1					
144. Youngest Hispanic boy with General Culture father	1					
145. Youngest Hispanic boy with Science father	0					
146. Youngest Hispanic boy with Technology (sex-type I) father	4					
147. Youngest Hispanic boy with Technology (sex-type II) father	5					
148. Youngest Hispanic boy with Business/Government father	1					
149. Youngest Hispanic boy with Outdoor father	4					
150. Youngest Hispanic boy with permanently Unemployed father	0					
151. Youngest S. Asian boy with Art/Entertainer father	0	3			0	0
152. Youngest S. Asian boy with Personal Service father	2					
153. Youngest S. Asian boy with Business Contact father	0					
154. Youngest S. Asian boy with General Culture father	0					
155. Youngest S. Asian boy with Science father	0					
156. Youngest S. Asian boy with Technology (sex-type I) father	0					
157. Youngest S. Asian boy with Technology (sex-type II) father	0					
158. Youngest S. Asian boy with Business/Government father	0					
159. Youngest S. Asian boy with Outdoor father	1					
160. Youngest S. Asian boy with permanently Unemployed father	0					
161. Youngest S. European boy with Art/Entertainer father	0	9			5	0
162. Youngest S. European boy with Personal Service father	0					
163. Youngest S. European boy with Business Contact father	1					
164. Youngest S. European boy with General Culture father	0					
165. Youngest S. European boy with Science father	0					
166. Youngest S. European boy with Technology (sex-type I) father	1					
167. Youngest S. European boy with Technology (sex-type II) father	3					
168. Youngest S. European boy with Business/Government father	3					
169. Youngest S. European boy with Outdoor father	1					
170. Youngest S. European boy with permanently Unemployed father	0					
171. Youngest Black boy with Art/Entertainer father	0	11			6	7
172. Youngest Black boy with Personal Service father	2					
173. Youngest Black boy with Business Contact father	2					
174. Youngest Black boy with General Culture father	0					
175. Youngest Black boy with Science father	0					
176. Youngest Black boy with Technology (sex-type I) father	6					
177. Youngest Black boy with Technology (sex-type II) father	0					
178. Youngest Black boy with Business/Government father	0					
179. Youngest Black boy with Outdoor father	0					
180. Youngest Black boy with permanently Unemployed father	1					
131. Youngest N.European boy with Art/Entertainer father	1					
141. Youngest Hispanic boy with Art/Entertainer father	0					
			119	484		

MATRIX I

Cell #	MATRIX I "CLEAR CASES" (360 cells) Page 4.	Cell Freq.	Ethnic Total	Ordinal Total	Sex Total	Ethnic Frequencies From Other Matrices Occ.Change	 No Fath
181.	Oldest N. Asian girl with Art/Entertainer father	0	0			0	0
182.	Oldest N. Asian girl with Personal Service father	0					
183.	Oldest N. Asian girl with Business Contact father	0					
184.	Oldest N. Asian girl with General Culture father	0					
185.	Oldest N. Asian girl with Science father	0					
186.	Oldest N. Asian girl with Technology (sex-type I) father	0					
187.	Oldest N. Asian girl with Technology (sex-type II) father	0					
188.	Oldest N. Asian girl with Business/Government father	0					
189.	Oldest N. Asian girl with Outdoor father	0					
190.	Oldest N. Asian girl with permanently Unemployed father	0					
191.	Oldest N. European girl with Art/Entertainer father	2	58			19	1
192.	Oldest N. European girl with Personal Service father	10					
193.	Oldest N. European girl with Business Contact father	3					
194.	Oldest N. European girl with General Culture father	5					
195.	Oldest N. European girl with Science father	0					
196.	Oldest N. European girl with Technology (sex-type I) father	21					
197.	Oldest N. European girl with Technology (sex-type II) father	5					
198.	Oldest N. European girl with Business/Government father	9					
199.	Oldest N. European girl with Outdoor father	3					
200.	Oldest N. European girl with permanently Unemployed father	0					
201.	Oldest Hispanic girl with Art/Entertainer father	1	12			10	2
202.	Oldest Hispanic girl with Personal Service father	3					
203.	Oldest Hispanic girl with Business Contact father	1					
204.	Oldest Hispanic girl with General Culture father	0					
205.	Oldest Hispanic girl with Science father	0					
206.	Oldest Hispanic girl with Technology (sex-type I) father	4					
207.	Oldest Hispanic girl with Technology (sex-type II) father	1					
208.	Oldest Hispanic girl with Business/Government father	0					
209.	Oldest Hispanic girl with Outdoor father	2					
210.	Oldest Hispanic girl with permanently Unemployed father	0					
211.	Oldest S. Asian girl with Art/Entertainer father	0	1			1	0
212.	Oldest S. Asian girl with Personal Service father	0					
213.	Oldest S. Asian girl with Business Contact father	0					
214.	Oldest S. Asian girl with General Culture father	0					
215.	Oldest S. Asian girl with Science father	0					
216.	Oldest S. Asian girl with Technology (sex-type I) father	0					
217.	Oldest S. Asian girl with Technology (sex-type II) father	0					
218.	Oldest S. Asian girl with Business/Government father	1					
219.	Oldest S. Asian girl with Outdoor father	0					
220.	Oldest S. Asian girl with permanently Unemployed father	0					
221.	Oldest S. European girl with Art/Entertainer father	1	9			2	0
222.	Oldest S. European girl with Personal Service father	2					
223.	Oldest S. European girl with Business Contact father	3					
224.	Oldest S. European girl with General Culture father	1					
225.	Oldest S. European girl with Science father	0					
226.	Oldest S. European girl with Technology (sex-type I) father	0					
227.	Oldest S. European girl with Technology (sex-type II) father	0					
228.	Oldest S. European girl with Business/Government father	1					
229.	Oldest S. European girl with Outdoor father	1					
230.	Oldest S. European girl with permanently Unemployed father	0					
231.	Oldest Black girl with Art/Entertainer father	0	2			4	2
232.	Oldest Black girl with Personal Service father	2					
233.	Oldest Black girl with Business Contact father	0					
234.	Oldest Black girl with General Culture father	0					
235.	Oldest Black girl with Science father	0					
236.	Oldest Black girl with Technology (sex-type I) father	0					
237.	Oldest Black girl with Technology (sex-type II) father	0					
238.	Oldest Black girl with Business/Government father	0					
239.	Oldest Black girl with Outdoor father	0					
240.	Oldest Black girl with permanently Unemployed father	0					
				82			

ell #	MATRIX I "CLEAR CASES" (360 cells) Page 5.	Cell Freq.	Ethnic Total	Ordinal Total	Sex Total	Ethnic Frequencies from other Matrices Occ.Change	No Father
241.	Middle N. Asian girl with Art/Entertainer father	0	0			0	0
242.	Middle N. Asian girl with Personal Service father	0					
243.	Middle N. Asian girl with Business Contact father	0					
244.	Middle N. Asian girl with General Culture father	0					
245.	Middle N. Asian girl with Science father	0					
246.	Middle N. Asian girl with Technology (sex-type I) father	0					
247.	Middle N. Asian girl with Technology (sex-type II) father	0					
248.	Middle N. Asian girl with Business/Government father	0					
249.	Middle N. Asian girl with Outdoor father	0					
250.	Middle N. Asian girl with permanently Unemployed father	0					
251.	Middle N. European girl with Art/Entertainer father	2	52			32	1
252.	Middle N. European girl with Personal Service father	4					
253.	Middle N. European girl with Business Contact father	5					
254.	Middle N. European girl with General Culture father	1					
255.	Middle N. European girl with Science father	0					
256.	Middle N. European girl with Technology (sex-type I) father	18					
257.	Middle N. European girl with Technology (sex-type II) father	9					
258.	Middle N. European girl with Business/Government father	11					
259.	Middle N. European girl with Outdoor father	2					
260.	Middle N. European girl with permanently Unemployed father	0					
261.	Middle Hispanic girl with Art/Entertainer father	0	39			23	2
262.	Middle Hispanic girl with Personal Service father	9					
263.	Middle Hispanic girl with Business Contact father	0					
264.	Middle Hispanic girl with General Culture father	1					
265.	Middle Hispanic girl with Science father	0					
266.	Middle Hispanic girl with Technology (sex-type I) father	11					
267.	Middle Hispanic girl with Technology (sex-type II) father	9					
268.	Middle Hispanic girl with Business/Government father	2					
269.	Middle Hispanic girl with Outdoor father	6					
270.	Middle Hispanic girl with permanently Unemployed father	1					
271.	Middle S. Asian girl with Art/Entertainer father	0	1			1	0
272.	Middle S. Asian girl with Personal Service father	0					
273.	Middle S. Asian girl with Business Contact father	0					
274.	Middle S. Asian girl with General Culture father	0					
275.	Middle S. Asian girl with Science father	0					
276.	Middle S. Asian girl with Technology (sex-type I) father	0					
277.	Middle S. Asian girl with Technology (sex-type II) father	0					
278.	Middle S. Asian girl with Business/Government father	1					
279.	Middle S. Asian girl with Outdoor father	0					
280.	Middle S. Asian girl with permanently Unemployed father	0					
281.	Middle S. European girl with Art/Entertainer father	0	2			2	0
282.	Middle S. European girl with Personal Service father	0					
283.	Middle S. European girl with Business Contact father	0					
284.	Middle S. European girl with General Culture father	0					
285.	Middle S. European girl with Science father	1					
286.	Middle S. European girl with Technology (sex-type I) father	0					
287.	Middle S. European girl with Technology (sex-type II) father	0					
288.	Middle S. European girl with Business/Government father	1					
289.	Middle S. European girl with Outdoor father	0					
290.	Middle S. European girl with permanently Unemployed father	0					
291.	Middle Black girl with Art/Entertainer father	0	17			15	2
292.	Middle Black girl with Personal Service father	6					
293.	Middle Black girl with Business Contact father	0					
294.	Middle Black girl with General Culture father	0					
295.	Middle Black girl with Science father	1					
296.	Middle Black girl with Technology (sex-type I) father	5					
297.	Middle Black girl with Technology (sex-type II) father	2					
298.	Middle Black girl with Business/Government father	2					
299.	Middle Black girl with Outdoor father	1					
300.	Middle Black girl with permanently Unemployed father	0					
				111			

MATRIX I

Cell #	MATRIX I "CLEAR CASES" (360 cells) Page 6.	Cell Freq.	Ethnic Total	Ordinal Total	Sex Total	Ethnic Frequencies from other Matrices	
						Occ.Change	No Fath
301.	Youngest N. Asian girl with Art/Entertainer father	0	2			2	2
302.	Youngest N. Asian girl with Personal Service father	0					
303.	Youngest N. Asian girl with Business Contact father	1					
304.	Youngest N. Asian girl with General Culture father	0					
305.	Youngest N. Asian girl with Science father	0					
306.	Youngest N. Asian girl with Technology (sex-type I) father	0					
307.	Youngest N. Asian girl with Technology (sex-type II) father	0					
308.	Youngest N. Asian girl with Business/Government father	0					
309.	Youngest N. Asian girl with Outdoor father	1					
310.	Youngest N. Asian girl with permanently Unemployed father	0					
311.	Youngest N. European girl with Art/Entertainer father	1	33			11	2
312.	Youngest N. European girl with Personal Service father	5					
313.	Youngest N. European girl with Business Contact father	1					
314.	Youngest N. European girl with General Culture father	1					
315.	Youngest N. European girl with Science father	2					
316.	Youngest N. European girl with Technology (sex-type I) father	15					
317.	Youngest N. European girl with Technology (sex-type II) father	5					
318.	Youngest N. European girl with Business/Government father	2					
319.	Youngest N. European girl with Outdoor father	1					
320.	Youngest N. European girl with permanently Unemployed father	0					
321.	Youngest Hispanic girl with Art/Entertainer father	0	7			7	2
322.	Youngest Hispanic girl with Personal Service father	1					
323.	Youngest Hispanic girl boy with Business Contact father	1					
324.	Youngest Hispanic girl with General Culture father	0					
325.	Youngest Hispanic girl with Science father	0					
326.	Youngest Hispanic girl with Technology (sex-type I) father	2					
327.	Youngest Hispanic girl with Technology (sex-type II) father	2					
328.	Youngest Hispanic girl with Business/Government father	0					
329.	Youngest Hispanic girl with Outdoor father	1					
330.	Youngest Hispanic girl with permanently Unemployed father	0					
331.	Youngest S. Asian girl with Art/Entertainer father	0	0			0	0
332.	Youngest S. Asian girl with Personal Service father	0					
333.	Youngest S. Asian girl with Business Contact father	0					
334.	Youngest S. Asian girl with General Culture father	0					
335.	Youngest S. Asian girl with Science father	0					
336.	Youngest S. Asian girl with Technology (sex-type I) father	0					
337.	Youngest S. Asian girl with Technology (sex-type II) father	0					
338.	Youngest S. Asian girl with Business/Government father	0					
339.	Youngest S. Asian girl with Outdoor father	0					
340.	Youngest S. Asian girl with permanently Unemployed father	0					
341.	Youngest S. European girl with Art/Entertainer father	0	1			0	0
342.	Youngest S. European girl with Personal Service father	0					
343.	Youngest S. European girl with Business Contact father	1					
344.	Youngest S. European girl with General Culture father	0					
345.	Youngest S. European girl with Science father	0					
346.	Youngest S. European girl with Technology (sex-type I) father	0					
347.	Youngest S. European girl with Technology (sex-type II) father	0					
348.	Youngest S. European girl with Business/Government father	0					
349.	Youngest S. European girl with Outdoor father	0					
350.	Youngest S. European girl with permanently Unemployed father	0					
351	Youngest Black girl with Art/Entertainer father	0	3			2	2
352.	Youngest Black girl with Personal Service father	1					
353.	Youngest Black girl with Business Contact father	0					
354.	Youngest Black girl with General Culture father	0					
355.	Youngest Black girl with Science father	0					
356.	Youngest Black girl with Technology (sex-type I) father	1					
357.	Youngest Black girl with Technology (sex-type II) father	1					
358.	Youngest Black girl with Business/Government father	0					
359.	Youngest Black girl with Outdoor father	0					
360.	Youngest Black girl with permanently Unemployed father	0					
				46	239		

Appendix B.

TABLE 2.

Matrix II

Cell #	NO FATHER MATRIX (36 Cells)	Cell Frequencies: Full Data	Cell Frequencies: Father Occ. Missing	Cell Frequencies: Total	Ordinal Total	Sex Total
361.	Oldest N. Asian boy with no father	0		0		
362.	Oldest N. European boy with no father	5		5		
363.	Oldest Hispanic boy with no father	1	1	2	9	
364.	Oldest S. Asian boy with no father	0		0		
365.	Oldest S. European boy with no father	0		0		
367.	Oldest Black boy with no father	2		2		
368.	Middle N. Asian boy with no father	0		0		
369.	Middle N. European boy with no father	5	1	6		
370.	Middle Hispanic boy with no father	5		5	16	41
371.	Middle S. Asian boy with no father	0		0		
372.	Middle S. European boy with no father	0		0		
373.	Middle Black boy with no father	4	1	5		
374.	Youngest N. Asian boy with no father	0		0		
375.	Youngest N. European boy with no father	4	2	6		
376.	Youngest Hispanic boy with no father	3		3	16	
377.	Youngest S. Asian boy with no father	0		0		
378.	Youngest S. European boy with no father	0		0		
379.	Youngest Black boy with no father	5	2	7		
380.	Oldest N. Asian girl with no father	0		0		
381.	Oldest N. European girl with no father	0	1	1		
382.	Oldest Hispanic girl with no father	2		2		
383.	Oldest S. Asian girl with no father	0		0	5	
384.	Oldest S. European girl with no father	0		0		
385	Oldest Black girl with no father	2		2		
386.	Middle N. Asian girl with no father	0		0		
387.	Middle N. European girl with no father	3	1	4		
388.	Middle Hispanic girl with no father	0	3	3		
389.	Middle S. Asian girl with no father	0		0	9	18
390.	Middle S. European girl with no father	0		0		
391.	Middle Black girl with no father	2		2		
392.	Youngest N. Asian girl with no father	0		0		
393.	Youngest N. European girl with no father	2		2		
394.	Youngest Hispanic girl with no father	0	2	2	4	
395.	Youngest S. Asian girl with no father	0		0		
396.	Youngest S. European girl with no father	0		0		
397.	Youngest Black girl with no father	0		0		
	Total Cases	45	14	59		
	Empty Cells			19/36		

Appendix B.

TABLE 3.

MATRIX III

Cell No.	FATHER'S OCCUPATION CHANGING MATRIX (36 cells)	Cell Freq.	Ordinal Total	Sex Total	Code 999/001 Working Father unemployed or out of home for a time
398.	Oldest N. Asian boy with father's occupation changing	0			
399.	Oldest N. European boy with father's occupation changing	34			
400.	Oldest Hispanic boy with father's occupation changing	15	58		18
401.	Oldest S. Asian boy with father's occupation changing	0			
402.	Oldest S. European boy with father's occupation changing	5			
403.	Oldest Black boy with father's occupation changing	4			
404.	Middle N. Asian boy with father's occupation changing	1		293	
405.	Middle N. European boy with father's occupation changing	74			
406.	Middle Hispanic boy with father's occupation changing	53	167		88
407.	Middle S. Asian boy with father's occupation changing	1			
408.	Middle S. European boy with father's occupation changing	5			
409.	Middle Black boy with father's occupation changing	33			
410.	Youngest N. Asian boy with father's occupation changing	1			
411.	Youngest N. European boy with father's occupation changing	45			
412.	Youngest Hispanic boy with father's occupation changing	11	68		34
413.	Youngest S. Asian boy with father's occupation changing	0			
414.	Youngest S. European boy with father's occupation changing	5			
415.	Youngest Black boy with father's occupation changing	6			
416.	Oldest N. Asian girl with father's occupation changing	0			
417.	Oldest N. European girl with father's occupation changing	19			
418.	Oldest Hispanic girl with father's occupation changing	10	36		15
419.	Oldest S. Asian girl with father's occupation changing	1			
420.	Oldest S. European girl with father's occupation changing	2			
421.	Oldest Black girl with father's occupation changing	4			
422.	Middle N. Asian girl with father's occupation changing	0			
423.	Middle N. European girl with father's occupation changing	32			
424.	Middle Hispanic girl with father's occupation changing	23	73		41
425.	Middle S. Asian girl with father's occupation changing	1			
426.	Middle S. European girl with father's occupation changing	2		131	
427.	Middle Black girl with father's occupation changing	15			
428.	Youngest N. Asian girl with father's occupation changing	2			
429.	Youngest N. European girl with father's occupation changing	11			
430.	Youngest Hispanic girl with father's occupation changing	7	22		14
431.	Youngest S. Asian girl with father's occupation changing	0			
432.	Youngest S. European girl with father's occupation changing	0			
433.	Youngest Black girl with father's occupation changing	2			
	TOTAL CASES	424			
	EMPTY CELLS	29/36			

Appendix B.

TABLE 4.

MATRIX IV Cell No.	BI-RACIAL MATRIX (60 cells)	Cell N	Ordinal Total	Sex Total
434.	Oldest bi-racial boy with Art/Entertainer father	1		
435.	Oldest bi-racial boy with Personal Service father	3		
436.	Oldest bi-racial boy with Business Contact father	1		
437.	Oldest bi-racial boy with General Culture father	0		
438.	Oldest bi-racial boy with Science father	1		
439.	Oldest bi-racial boy with Technology (sex-type I) father	4	11	
440.	Oldest bi-racial boy with Technology (sex-type II) father	0		
441.	Oldest bi-racial boy with Business/Government father	0		
442.	Oldest bi-racial boy with Outdoor father	1		
443.	Oldest bi-racial boy with permanently Unemployed father	0		
444.	Middle bi-racial boy with Art/Entertainer father	0		
445.	Middle bi-racial boy with Personal Service father	2		
446.	Middle bi-racial boy with Business Contact father	1		
447.	Middle bi-racial boy with General Culture father	1		
448.	Middle bi-racial boy with Science father	0		
449.	Middle bi-racial boy with Technology (sex-type I) father	4	9	21
450.	Middle bi-racial boy with Technology (sex-type II) father	1		
451.	Middle bi-racial boy with Business/Government father	0		
452.	Middle bi-racial boy with Outdoor father	0		
453.	Middle bi-racial boy with permanently Unemployed father	0		
454.	Youngest bi-racial boy with Art/Entertainer father	0		
455.	Youngest bi-racial boy with Personal Service father	0		
456.	Youngest bi-racial boy with Business Contact father	0		
457.	Youngest bi-racial boy with General Culture father	0	1	
458.	Youngest bi-racial boy with Science father	0		
459.	Youngest bi-racial boy with Technology (sex-type I) father	0		
460.	Youngest bi-racial boy with Technology (sex-type II) father	1		
461.	Youngest bi-racial boy with Business/Government father	0		
462.	Youngest bi-racial boy with Outdoor father	0		
463.	Youngest bi-racial boy with permanently Unemployed father	0		
464.	Oldest bi-racial girl with Art/Entertainer father	0		
465.	Oldest bi-racial girl with Personal Service father	0		
466.	Oldest bi-racial girl with Business Contact father	0	7	
467.	Oldest bi-racial girl with General Culture father	1		
468.	Oldest bi-racial girl with Science father	0		
469.	Oldest bi-racial girl with Technology (sex-type I) father	1		
470.	Oldest bi-racial girl with Technology (sex-type II) father	3		
471.	Oldest bi-racial girl with Business/Government father	2		
472.	Oldest bi-racial girl with Outdoor father	0		
473.	Oldest bi-racial girl with permanently Unemployed father	0		
474.	Middle bi-racial girl with Art/Entertainer father	0		
475.	Middle bi-racial girl with Personal Service father	0		
476.	Middle bi-racial girl with Business Contact father	1		
477.	Middle bi-racial girl with General Culture father	0		
478.	Middle bi-racial girl with Science father	0	4	14
480.	Middle bi-racial girl with Technology (sex-type I) father	1		
481.	Middle bi-racial girl with Technology (sex-type II) father	1		
482.	Middle bi-racial girl with Business/Government father	0		
483.	Middle bi-racial girl with Outdoor father	1		
484.	Middle bi-racial girl with permanently Unemployed father	0		
485.	Youngest bi-racial girl with Art/Entertainer father	1		
486.	Youngest bi-racial girl with Personal Service father	0		
487.	Youngest bi-racial girl with Business Contact father	0		
488.	Youngest bi-racial girl with General Culture father	0		
489.	Youngest bi-racial girl with Science father	0	3	
490.	Youngest bi-racial girl with Technology (sex-type I) father	1		
491.	Youngest bi-racial girl with Technology (sex-type II) father	0		
492.	Youngest bi-racial girl with Business/Government father	0		
493.	Youngest bi-racial girl with Outdoor father	1		
494.	Youngest bi-racial girl with permanently Unemployed father	0		
	TOTAL CASES	35		
	EMPTY CELLS	37/60		

Appendix B.
TABLE 5.

Cell Numbers for "Clear" and Bi-racial Cases, by Fathers' Occupation

Cell No.	Personal Service Occupation	Cell N	Ordinal Place	Sex
2.	Oldest N. Asian boy with Personal Service father	1	36	82
12.	Oldest N. European boy with Personal Service father	13		
22.	Oldest Hispanic boy with Personal Service father	5		
32.	Oldest S. Asian boy with Personal Service father	0		
42.	Oldest S. European boy with Personal Service father	3		
52.	Oldest Black boy with Personal Service father	4		
62.	Middle N. Asian boy with Personal Service father	0	38	
72.	Middle N. European boy with Personal Service father	16		
82.	Middle Hispanic boy with Personal Service father	15		
92.	Middle S. Asian boy with Personal Service father	0		
102.	Middle S. European boy with Personal Service father	1		
112.	Middle Black boy with Personal Service father	6		
122.	Youngest N. Asian boy with Personal Service father	2	18	
132.	Youngest N. European boy with Personal Service father	10		
142.	Youngest Hispanic boy with Personal Service father	2		
152.	Youngest S. Asian boy with Personal Service father	2		
162.	Youngest S. European boy with Personal Service father	0		
172.	Youngest Black boy with Personal Service father	2		
182.	Oldest N. Asian girl with Personal Service father	0	17	43
192.	Oldest N. European girl with Personal Service father	10		
202.	Oldest Hispanic girl with Personal Service father	3		
212.	Oldest S. Asian girl with Personal Service father	0		
222.	Oldest S. European girl with Personal Service father	2		
232.	Oldest Black girl with Personal Service father	2		
242.	Middle N. Asian girl with Personal Service father	0	19	
252.	Middle N. European girl with Personal Service father	4		
262.	Middle Hispanic girl with Personal Service father	9		
272.	Middle S. Asian girl with Personal Service father	0		
282.	Middle S. European girl with Personal Service father	0		
292.	Middle Black girl with Personal Service father	6		
302.	Youngest N. Asian girl with Personal Service father	0	7	
312.	Youngest N. European girl with Personal Service father	5		
322.	Youngest Hispanic girl with Personal Service father	1		
332.	Youngest S. Asian girl with Personal Service father	0		
342.	Youngest S. European girl with Personal Service father	0		
352.	Youngest Black girl with Personal Service father	1		

From Bi-racial Matrix

435.	Oldest bi-racial boy with Personal Service father	3	5
445.	Middle bi-racial boy with Personal Service father	2	
455.	Youngest bi-racial boy with Personal Service father	0	
465.	Oldest bi-racial girl with Personal Service father	0	0
475.	Middle bi-racial girl with Personal Service father	0	
485.	Youngest bi-racial girl with Personal Service father	0	

Cell No.	Business Contact Occupation	Cell N	Ordinal Place	Sex
3.	Oldest N. Asian boy with Business Contact father	0	7	25
13.	Oldest N. European boy with Business Contact father	6		
23.	Oldest Hispanic boy with Business Contact father	1		
33.	Oldest S. Asian boy with Business Contact father	0		
43.	Oldest S. European boy with Business Contact father	0		
53.	Oldest Black boy with Business Contact father	0		
63.	Middle N. Asian boy with Business Contact father	0	7	
73.	Middle N. European boy with Business Contact father	3		
83.	Middle Hispanic boy with Business Contact father	2		
93.	Middle S. Asian boy with Business Contact father	0		
103.	Middle S. European boy with Business Contact father	1		
113.	Middle Black boy with Business Contact father	1		
123.	Youngest N. Asian boy with Business Contact father	0	11	
133.	Youngest N. European boy with Business Contact father	7		
143.	Youngest Hispanic boy with Business Contact father	1		
153.	Youngest S. Asian boy with Business Contact father	0		
163.	Youngest S. European boy with Business Contact father	1		
173.	Youngest Black boy with Business Contact father	2		
183.	Oldest N. Asian girl with Business Contact father	0	7	16
193.	Oldest N. European girl with Business Contact father	3		
203.	Oldest Hispanic girl with Business Contact father	1		
213.	Oldest S. Asian girl with Business Contact father	0		
223.	Oldest S. European girl with Business Contact father	3		
233.	Oldest Black girl with Business Contact father	0		
243.	Middle N. Asian girl with Business Contact father	0	5	
253.	Middle N. European girl with Business Contact father	5		
263.	Middle Hispanic girl with Business Contact father	0		
273.	Middle S. Asian girl with Business Contact father	0		
283.	Middle S. European girl with Business Contact father	0		
293.	Middle Black girl with Business Contact father	0		
303.	Youngest N. Asian girl with Business Contact father	1	4	
313.	Youngest N. European girl with Business Contact father	1		
323.	Youngest Hispanic girl boy with Business Contact father	1		
333.	Youngest S. Asian girl with Business Contact father	0		
343.	Youngest S. European girl with Business Contact father	1		
353.	Youngest Black girl with Business Contact father	0		

From Bi-racial Matrix

436.	Oldest bi-racial boy with Business Contact father	1		2
446.	Middle bi-racial boy with Business Contact father	1		
456.	Youngest bi-racial boy with Business Contact father	0		
466.	Oldest bi-racial girl with Business Contact father	0		1
476.	Middle bi-racial girl with Business Contact father	1		
486.	Youngest bi-racial girl with Business Contact father	0		

Cell No.	General Culture Occupation	Cell N	Ordinal Place	Sex
4.	Oldest N. Asian boy with General Culture father	1	7	17
14.	Oldest N. European boy with General Culture father	6		
24.	Oldest Hispanic boy with General Culture father	0		
34.	Oldest S. Asian boy with General Culture father	0		
44.	Oldest S. European boy with General Culture father	0		
54.	Oldest Black boy with General Culture father	0		
64.	Middle N. Asian boy with General Culture father	0	5	
74.	Middle N. European boy with General Culture father	4		
84.	Middle Hispanic boy with General Culture father	0		
94.	Middle S. Asian boy with General Culture father	0		
104.	Middle S. European boy with General Culture father	0		
114.	Middle Black boy with General Culture father	1		
124.	Youngest N. Asian boy with General Culture father	0	5	
134.	Youngest N. European boy with General Culture father	4		
144.	Youngest Hispanic boy with General Culture father	1		
154.	Youngest S. Asian boy with General Culture father	0		
164.	Youngest S. European boy with General Culture father	0		
174.	Youngest Black boy with General Culture father	0		
184.	Oldest N. Asian girl with General Culture father	0	6	8
194.	Oldest N. European girl with General Culture father	5		
204.	Oldest Hispanic girl with General Culture father	0		
214.	Oldest S. Asian girl with General Culture father	0		
224.	Oldest S. European girl with General Culture father	1		
234.	Oldest Black girl with General Culture father	0		
244.	Middle N. Asian girl with General Culture father	0	1	
254.	Middle N. European girl with General Culture father	5		
264.	Middle Hispanic girl with General Culture father	1		
274.	Middle S. Asian girl with General Culture father	0		
284.	Middle S. European girl with General Culture father	0		
294.	Middle Black girl with General Culture father	0		
304.	Youngest N. Asian girl with General Culture father	0	1	
314.	Youngest N. European girl with General Culture father	1		
324.	Youngest Hispanic girl with General Culture father	0		
334.	Youngest S. Asian girl with General Culture father	0		
344.	Youngest S. European girl with General Culture father	0		
354.	Youngest Black girl with General Culture father	0		

From Bi-racial Matrix

437.	Oldest bi-racial boy with General Culture father	0		1
447.	Middle bi-racial boy with General Culture father	1		
457.	Youngest bi-racial boy with General Culture father	0		
467.	Oldest bi-racial girl with General Culture father	1		1
477.	Middle bi-racial girl with General Culture father	0		
487.	Youngest bi-racial girl with General Culture father	0		

Cell No.	Science Occupation	Cell N	Ordinal Place	Sex
5.	Oldest N. Asian boy with Science father	0	4	8
15.	Oldest N. European boy with Science father	3		
25.	Oldest Hispanic boy with Science father	0		
35.	Oldest S. Asian boy with Science father	0		
45.	Oldest S. European boy with Science father	0		
55.	Oldest Black boy with Science father	1		
65.	Middle N. Asian boy with Science father	0	2	
75.	Middle N. European boy with Science father	1		
85.	Middle Hispanic boy with Science father	1		
95.	Middle S. Asian boy with Science father	0		
105.	Middle S. European boy with Science father	0		
115.	Middle Black boy with Science father	0		
125.	Youngest N. Asian boy with Science father	0	2	
135.	Youngest N. European boy with Science father	2		
145.	Youngest Hispanic boy with Science father	0		
155.	Youngest S. Asian boy with Science father	0		
165.	Youngest S. European boy with Science father	0		
175.	Youngest Black boy with Science father	0		
185.	Oldest N. Asian girl with Science father	0	0	4
195.	Oldest N. European girl with Science father	0		
205.	Oldest Hispanic girl with Science father	0		
215.	Oldest S. Asian girl with Science father	0		
225.	Oldest S. European girl with Science father	0		
235.	Oldest Black girl with Science father	0		
245.	Middle N. Asian girl with Science father	0	2	
255.	Middle N. European girl with Science father	0		
265.	Middle Hispanic girl with Science father	0		
275.	Middle S. Asian girl with Science father	0		
285.	Middle S. European girl with Science father	1		
295.	Middle Black girl with Science father	1		
305.	Youngest N. Asian girl with Science father	0	2	
315.	Youngest N. European girl with Science father	2		
325.	Youngest Hispanic girl with Science father	0		
335.	Youngest S. Asian girl with Science father	0		
345.	Youngest S. European girl with Science father	0		
355.	Youngest Black girl with Science father	0		

From Bi-racial Matrix

438.	Oldest bi-racial boy with Science father	1		1
448.	Middle bi-racial boy with Science father	0		
458.	Youngest bi-racial boy with Science father	0		
468.	Oldest bi-racial girl with Science father	0		0
478.	Middle bi-racial girl with Science father	0		
488.	Youngest bi-racial girl with Science father	0		

Cell No.	Technology (sex-type I) Occupation	Cell N	Ordinal Place	Sex
6.	Oldest N. Asian boy with Technology (sex-type I) father	0	45	160
16.	Oldest N. European boy with Technology (sex-type I) father	36		
26.	Oldest Hispanic boy with Technology (sex-type I) father	7		
36.	Oldest S. Asian boy with Technology (sex-type I) father	0		
46.	Oldest S. European boy with Technology (sex-type I) father	0		
56.	Oldest Black boy with Technology (sex-type I) father	2		
66.	Middle N. Asian boy with Technology (sex-type I) father	0	14	
76.	Middle N. European boy with Technology (sex-type I) father	49		
86.	Middle Hispanic boy with Technology (sex-type I) father	14		
96.	Middle S. Asian boy with Technology (sex-type I) father	0		
106.	Middle S. European boy with Technology (sex-type I) father	1		
116.	Middle Black boy with Technology (sex-type I) father	10		
126.	Youngest N. Asian boy with Technology (sex-type I) father	0	41	
136.	Youngest N. European boy with Technology (sex-type I) father	30		
146.	Youngest Hispanic boy with Technology (sex-type I) father	4		
156.	Youngest S. Asian boy with Technology (sex-type I) father	0		
166.	Youngest S. European boy with Technology (sex-type I) father	1		
176.	Youngest Black boy with Technology (sex-type I) father	6		
186.	Oldest N. Asian girl with Technology (sex-type I) father	0	35	77
196.	Oldest N. European girl with Technology (sex-type I) father	21		
206.	Oldest Hispanic girl with Technology (sex-type I) father	4		
216.	Oldest S. Asian girl with Technology (sex-type I) father	0		
226.	Oldest S. European girl with Technology (sex-type I) father	0		
236.	Oldest Black girl with Technology (sex-type I) father	0		
246.	Middle N. Asian girl with Technology (sex-type I) father	0	34	
256.	Middle N. European girl with Technology (sex-type I) father	18		
266.	Middle Hispanic girl with Technology (sex-type I) father	11		
276.	Middle S. Asian girl with Technology (sex-type I) father	0		
286.	Middle S. European girl with Technology (sex-type I) father	0		
296.	Middle Black girl with Technology (sex-type I) father	5		
306.	Youngest N. Asian girl with Technology (sex-type I) father	0	18	
316.	Youngest N. European girl with Technology (sex-type I) father	15		
326.	Youngest Hispanic girl with Technology (sex-type I) father	2		
336.	Youngest S. Asian girl with Technology (sex-type I) father	0		
346.	Youngest S. European girl with Technology (sex-type I) father	0		
356.	Youngest Black girl with Technology (sex-type I) father	1		

From Bi-racial Matrix

439.	Oldest bi-racial boy with Technology (sex-type I) father	4	8
449.	Middle bi-racial boy with Technology (sex-type I) father	4	
459.	Youngest bi-racial boy with Technology (sex-type I) father	0	
469.	Oldest bi-racial girl with Technology (sex-type I) father	1	3
479.	Middle bi-racial girl with Technology (sex-type I) father	1	
489.	Youngest bi-racial girl with Technology (sex-type I) father	1	

Cell No.	Technology (sex-type II) Occupation	Cell N	Ordinal Place	Sex
7.	Oldest N. Asian boy with Technology (sex-type II) father	0	21	88
17.	Oldest N. European boy with Technology (sex-type II) father	14		
27.	Oldest Hispanic boy with Technology (sex-type II) father	7		
37.	Oldest S. Asian boy with Technology (sex-type II) father	0		
47.	Oldest S. European boy with Technology (sex-type II) father	0		
57.	Oldest Black boy with Technology (sex-type II) father	0		
67.	Middle N. Asian boy with Technology (sex-type II) father	1	47	
77.	Middle N. European boy with Technology (sex-type II) father	27		
87.	Middle Hispanic boy with Technology (sex-type II) father	16		
97.	Middle S. Asian boy with Technology (sex-type II) father	0		
107.	Middle S. European boy with Technology (sex-type II) father	0		
117.	Middle Black boy with Technology (sex-type II) father	3		
127.	Youngest N. Asian boy with Technology (sex-type II) father	0	20	
137.	Youngest N. European boy with Technology (sex-type II) father	12		
147.	Youngest Hispanic boy with Technology (sex-type II) father	5		
157.	Youngest S. Asian boy with Technology (sex-type II) father	0		
167.	Youngest S. European boy with Technology (sex-type II) father	3		
177.	Youngest Black boy with Technology (sex-type II) father	0		
187.	Oldest N. Asian girl with Technology (sex-type II) father	0	6	34
197.	Oldest N. European girl with Technology (sex-type II) father	5		
207.	Oldest Hispanic girl with Technology (sex-type II) father	1		
217.	Oldest S. Asian girl with Technology (sex-type II) father	0		
227.	Oldest S. European girl with Technology (sex-type II) father	0		
237.	Oldest Black girl with Technology (sex-type II) father	0		
247.	Middle N. Asian girl with Technology (sex-type II) father	0	20	
257.	Middle N. European girl with Technology (sex-type II) father	9		
267.	Middle Hispanic girl with Technology (sex-type II) father	9		
277.	Middle S. Asian girl with Technology (sex-type II) father	0		
287.	Middle S. European girl with Technology (sex-type II) father	0		
297.	Middle Black girl with Technology (sex-type II) father	2		
307.	Youngest N. Asian girl with Technology (sex-type II) father	0	8	
317.	Youngest N. European girl with Technology (sex-type II) father	5		
327.	Youngest Hispanic girl with Technology (sex-type II) father	2		
337.	Youngest S. Asian girl with Technology (sex-type II) father	0		
347.	Youngest S. European girl with Technology (sex-type II) father	0		
357.	Youngest Black girl with Technology (sex-type II) father	1		

From Bi-racial Matrix

440.	Oldest bi-racial boy with Technology (sex-type II) father	0		2
450.	Middle bi-racial boy with Technology (sex-type II) father	1		
460.	Youngest bi-racial boy with Technology (sex-type II) father	1		
470.	Oldest bi-racial girl with Technology (sex-type II) father	3		4
480.	Middle bi-racial girl with Technology (sex-type II) father	1		
490.	Youngest bi-racial girl with Technology (sex-type II) father	0		

Cell No.	Business/Government Organization Occupation	Cell N	Ordinal Place	Sex
8.	Oldest N. Asian boy with Business/Government father	1	14	45
18.	Oldest N. European boy with Business/Government father	9		
28.	Oldest Hispanic boy with Business/Government father	3		
38.	Oldest S. Asian boy with Business/Government father	0		
48.	Oldest S. European boy with Business/Government father	1		
58.	Oldest Black boy with Business/Government father	0		
68.	Middle N. Asian boy with Business/Government father	0	18	
78.	Middle N. European boy with Business/Government father	11		
88.	MIddle Hispanic boy with Business/Government father	4		
98.	Middle S. Asian boy with Business/Government father	0		
108.	Middle S. European boy with Business/Government father	1		
118.	Middle Black boy with Business/Government father	2		
128.	Youngest N. Asian boy with Business/Government father	0	13	
138.	Youngest N. European boy with Business/Government father	9		
148.	Youngest Hispanic boy with Business/Government father	1		
158.	Youngest S. Asian boy with Business/Government father	0		
168.	Youngest S. European boy with Business/Government father	3		
178.	Youngest Black boy with Business/Government father	0		
188.	Oldest N. Asian girl with Business/Government father	0	11	30
198.	Oldest N. European girl with Business/Government father	9		
208.	Oldest Hispanic girl with Business/Government father	0		
218.	Oldest S. Asian girl with Business/Government father	1		
228.	Oldest S. European girl with Business/Government father	1		
238.	Oldest Black girl with Business/Government father	0		
248.	Middle N. Asian girl with Business/Government father	0	17	
258.	Middle N. European girl with Business/Government father	11		
268.	Middle Hispanic girl with Business/Government father	2		
278.	MIddle S. Asian girl with Business/Government father	1		
288.	Middle S. European girl with Business/Government father	1		
298.	Middle Black girl with Business/Government father	2		
308.	Youngest N. Asian girl with Business/Government father	0	2	
318.	Youngest N. European girl with Business/Government father	2		
328.	Youngest Hispanic girl with Business/Government father	0		
338.	Youngest S. Asian girl with Business/Government father	0		
348.	Youngest S. European girl with Business/Government father	0		
358.	Youngest Black girl with Business/Government father	0		

From Bi-racial Matrix

Cell No.	Business/Government Organization Occupation	Cell N	Ordinal Place	Sex
441.	Oldest bi-racial boy with Business/Government father	0		0
451.	Middle bi-racial boy with Business/Government father	0		
461.	Youngest bi-racial boy with Business/Government father	0		
471.	Oldest bi-racial girl with Business/Government father	2		2
481.	Middle bi-racial girl with Business/Government father	0		
491.	Youngest bi-racial girl with Business/Government father	0		

Cell No.	Outdoor Occupation	Cell N	Ordinal Place	Sex
9.	Oldest N. Asian boy with Outdoor father	0		
19.	Oldest N. European boy with Outdoor father	1		
29.	Oldest Hispanic boy with Outdoor father	4		
39.	Oldest S. Asian boy with Outdoor father	0	6	
49.	Oldest S. European boy with Outdoor father	0		
59.	Oldest Black boy with Outdoor father	1		
69.	Middle N. Asian boy with Outdoor father	0		
79.	Middle N. European boy with Outdoor father	6		
89.	Middle Hispanic boy with Outdoor father	17	25	38
99.	Middle S. Asian boy with Outdoor father	1		
109.	Middle S. European boy with Outdoor father	0		
119.	Middle Black boy with Outdoor father	1		
129.	Youngest N. Asian boy with Outdoor father	0		
139.	Youngest N. European boy with Outdoor father	1		
149.	Youngest Hispanic boy with Outdoor father	4	7	
159.	Youngest S. Asian boy with Outdoor father	1		
169.	Youngest S. European boy with Outdoor father	1		
179.	Youngest Black boy with Outdoor father	0		
189.	Oldest N. Asian girl with Outdoor father	0		
199.	Oldest N. European girl with Outdoor father	3		
209.	Oldest Hispanic girl with Outdoor father	2	6	
219.	Oldest S. Asian girl with Outdoor father	0		
229.	Oldest S. European girl with Outdoor father	1		
239.	Oldest Black girl with Outdoor father	0		
249.	Middle N. Asian girl with Outdoor father	0		
259.	Middle N. European girl with Outdoor father	2		
269.	Middle Hispanic girl with Outdoor father	6	9	18
279.	Middle S. Asian girl with Outdoor father	0		
289.	Middle S. European girl with Outdoor father	0		
299.	Middle Black girl with Outdoor father	1		
309.	Youngest N. Asian girl with Outdoor father	1		
319.	Youngest N. European girl with Outdoor father	1		
329.	Youngest Hispanic girl with Outdoor father	1	3	
339.	Youngest S. Asian girl with Outdoor father	0		
349.	Youngest S. European girl with Outdoor father	0		
359.	Youngest Black girl with Outdoor father	0		

From Bi-racial Matrix

442.	Oldest bi-racial boy with Outdoor father	1		
452.	Middle bi-racial boy with Outdoor father	0		1
462.	Youngest bi-racial boy with Outdoor father	0		
472.	Oldest bi-racial girl with Outdoor father	0		
482.	Middle bi-racial girl with Outdoor father	1		2
492.	Youngest bi-racial girl with Outdoor father	1		

Cell No.	Father Permanently Unemployed	Cell N	Ordinal Place	Sex
10.	Oldest N. Asian boy with permanently Unemployed father	0		
20.	Oldest N. European boy with permanently Unemployed father	0		
30.	Oldest Hispanic boy with permanently Unemployed father	1		
40.	Oldest S. Asian boy with permanently Unemployed father	0	1	
50.	Oldest S. European boy with permanently Unemployed father	0		
60.	Oldest Black boy with permanently Unemployed father	0		
70.	Middle N. Asian boy with permanently Unemployed father	0		
80.	Middle N. European boy with permanently Unemployed father	0		
90.	Middle Hispanic boy with permanently Unemployed father	2		
100.	Middle S. Asian boy with permanently Unemployed father	0	2.	4
110.	Middle S. European boy with permanently Unemployed father	0		
120.	Middle Black boy with permanently Unemployed father	0		
130.	Youngest N. Asian boy with permanently Unemployed father	0		
140.	Youngest N. European boy with permanently Unemployed father	0		
150.	Youngest Hispanic boy with permanently Unemployed father	0		
160.	Youngest S. Asian boy with permanently Unemployed father	0	1	
170.	Youngest S. European boy with permanently Unemployed father	0		
180.	Youngest Black boy with permanently Unemployed father	1		
190.	Oldest N. Asian girl with permanently Unemployed father	0		
200.	Oldest N. European girl with permanently Unemployed father	0		
210.	Oldest Hispanic girl with permanently Unemployed father	0		
220.	Oldest S. Asian girl with permanently Unemployed father	0	0	
230.	Oldest S. European girl with permanently Unemployed father	0		
240.	Oldest Black girl with permanently Unemployed father	0		
250.	Middle N. Asian girl with permanently Unemployed father	0		
260.	Middle N. European girl with permanently Unemployed father	0		
270.	Middle Hispanic girl with permanently Unemployed father	1		
280.	Middle S. Asian girl with permanently Unemployed father	0	1	1
290.	Middle S. European girl with permanently Unemployed father	0		
300.	Middle Black girl with permanently Unemployed father	0		
310.	Youngest N. Asian girl with permanently Unemployed father	0		
320.	Youngest N. European girl with permanently Unemployed father	0		
330.	Youngest Hispanic girl with permanently Unemployed father	0		
340.	Youngest S. Asian girl with permanently Unemployed father	0	0	
350.	Youngest S. European girl with permanently Unemployed father	0		
360.	Youngest Black girl with permanently Unemployed father	0		

From Bi-racial Matrix

443.	Oldest bi-racial boy with permanently Unemployed father	0		
453.	Middle bi-racial boy with permanently Unemployed father	0		0
463.	Youngest bi-racial boy with permanently Unemployed father	0		
473.	Oldest bi-racial girl with permanently Unemployed father	0		
483.	Middle bi-racial girl with permanently Unemployed father	0		0
491.	Youngest bi-racial girl with permanently Unemployed father	0		

Appendix B

Table 6. Breakdown of Fathers' Occupations by Ethnic Status, Ordinal Place and Sex of the Student

OCCUPATIONAL GROUP	ORDINAL PLACE	No. Asian				No. European				Hispanic				So. Asian				So. European				Black			
		M		F		M		F		M		F		M		F		M		F		M		F	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Arts/ Entertainment	Oldest	0	0	0	0	4	67	2	33	0	0	1	100	0	0	1	100	0	0	0	0	1	100	0	0
	Middle	0	0	0	0	8	80	2	20	2	100	0	0	0	0	0	0	0	0	0	0	1	100	0	0
	youngest	0	0	0	0	1	50	1	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Personal Service	Oldest	1	100	0	0	13	57	10	43	5	63	3	38	0	0	0	0	3	60	2	40	4	67	2	33
	Middle	0	0	0	0	16	80	4	20	15	63	9	38	0	0	0	0	1	100	0	0	6	50	6	50
	Youngest	2	100	0	0	10	67	5	33	2	67	1	33	2	100	0	0	0	0	0	0	2	67	1	33
Business Contact	Oldest	0	0	0	0	6	67	3	33	1	50	1	50	0	0	0	0	0	0	3	100	0	0	0	0
	Middle	0	0	0	0	3	38	5	63	2	100	0	0	0	0	0	0	1	100	0	0	2	100	0	0
	Youngest	0	0	1	100	7	88	1	13	1	50	1	50	0	0	0	0	1	50	1	50	2	100	0	0
General Culture	Oldest	1	100	0	0	6	55	5	45	0	0	0	0	0	0	0	0	0	0	1	100	0	0	0	0
	Middle	0	0	0	0	4	80	1	20	0	0	1	100	0	0	0	0	0	0	0	0	1	100	0	0
	Youngest	0	0	0	0	4	80	1	20	1	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Science	Oldest	0	0	0	0	3	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	100	0	0
	Middle	0	0	0	0	1	100	0	0	1	100	0	0	0	0	0	0	0	0	1	100	0	0	1	100
	Youngest	0	0	0	0	2	50	2	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Technology (sex-type I)	Oldest	0	0	0	0	36	63	21	37	7	64	4	36	0	0	0	0	0	0	0	0	2	100	0	0
	Middle	0	0	0	0	49	73	18	27	14	56	11	44	0	0	0	0	1	100	0	0	10	67	5	33
	Youngest	0	0	0	0	30	67	15	33	4	67	2	33	0	0	0	0	1	100	0	0	6	86	1	14
Technology (sex-type II)	Oldest	0	0	0	0	14	79	5	21	7	88	1	13	0	0	0	0	0	0	0	0	0	0	0	0
	Middle	1	100	0	0	27	75	9	25	16	64	9	36	0	0	0	0	0	0	0	0	3	60	2	40
	Youngest	0	0	0	0	12	71	5	29	5	71	2	29	0	0	0	0	3	100	0	0	0	0	1	100
Business/ Government Organization	Oldest	1	100	0	0	9	50	9	50	3	100	0	0	0	0	1	100	1	50	1	50	0	0	0	0
	Middle	0	0	0	0	11	50	11	50	4	67	2	33	0	0	1	100	1	50	1	50	2	50	2	50
	Youngest	0	0	0	0	9	82	2	18	1	100	0	0	0	0	0	0	3	100	0	0	0	0	0	0
Outdoor	Oldest	0	0	0	0	1	25	3	75	4	67	2	33	0	0	0	0	0	0	1	100	1	100	0	0
	Middle	0	0	0	0	6	75	2	25	17	74	6	26	1	100	0	0	0	0	0	0	1	50	1	50
	Youngest	0	0	1	100	1	50	1	50	4	80	1	20	0	0	0	0	1	100	0	0	0	0	0	0
Permanently Unemployed	Oldest	0	0	0	0	0	0	0	0	1	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Middle	0	0	0	0	0	0	0	0	2	67	1	33	0	0	0	0	0	0	0	0	0	0	0	0
	Youngest	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	100
TOTALS		6	75	2	25	293	67	143	33	119	67	58	33	4	67	2	33	17	59	12	41	45	67	22	33

APPENDIX C-I

CATALOGUE OF PERSONAL INTERACTION ITEMS
SKILL INVENTORY

Information C-I

Recall of facts (Information):

Postured   changed tone of voice   used baby talk 1

Demonstrated with gestures   pointed   shook head "no" 2

Asked for repetitions   repeated items in a questioning tone 3

Questioned the tester to narrow alternatives   frame contexts
confirm answers   tell answers 4

Implied more knowledge than response showed with "or something"/"whatever"
"stuff like that" 5

Said "Don't know"   "forgot"   "no"   "Don't have it in mind" 6

Said "Maybe"/"about"   "I think"/"I guess"   Used a questioning tone 7

Said "I'm not into..."   "Have never been there..."   "Don't read things like that" 8
"Never heard of.."

Sounded exasperated   Reversed roles and questioned back sarcastically
Said items were stupid/"baby questions"/ "crazy"   Asked where they came from 9

Asked if the tester/other students knew the answers 10

Seemed surprized/laughed at easy items 11

When stuck, laughed   joked 12

Referred to personal experience   had it in class   added facts/side comments 13

Seemed nervous/restless   jiggled   fiddled with objects or fingers 14

Was very interactive   commented about the tester/the test   Asked what it was for 15

Criticized own responses   excused own failures   apologized for failures 16

Directed the tester to "Go ahead"/"Wait"   interrupted 17

Had to be questioned _____/_____ times to clarify 18

Had to be urged to guess   gave little laughs after each item 19

8

Improved if questioned 20

Comprehension

Verbalizing advice: (Comprehension)

Repeated items in a questioning tone 1

Repeated items in a challenging tone   disagreed/argued with the item 2

Seemed inarticulate   had to be encouraged to say idea 3

Had to be urged to guess 4

Had to be questioned on _____/_____ items 5

Said "Don't know" and then answered   expanded if questioned 6

Kept adding ideas   drifted into stories 7

Questioned the tester to narrow alternatives   frame the context
define words   tell answers 8

Did not look at the tester   mumbled   spoke very softly 9

Switched roles and questioned the tester back 10

Made personal comments   commented about the test/ asked what it was for 11

Inferred more knowledge than response showed   trailed off with 'or something'
'stuff like that' 12

Said "No"   "Don't know"   "Never heard of it" 13

Became very interactive   laughed   joked 14

Became restless   jiggled   fiddled with objects   got up 15

Seemed impatiant/exasperated by questions   tapped   gave perfunctory answers 16

Said "Never happened to me"   "Don't do/go there"   "How should I know?"   "Don't care" 17

Personalized from experience   said "What I would do..." 18

Excused ignorance   apologized   said "No one ever told me" 19

_____/_____ items were addressed to "you" 20

_____/_____ items involved "telling" others/what others "say" to do/being polite 21

Noted that tester wrote everything down   said "Don't write that" 22

Vocabulary:

Said "Never heard it before" "Don't know the rest" 1

Seemed inarticulate pointed at objects 2

Shook head 'no' Had to be prompted/questioned to say "Don't know" mumbled 3

Made false starts stuttered used fillers Said "Let me think..." 4

Said words were hard exclaimed/moaned cried shaky voice 5

Did not understand directions Asked "What I think?" 6

Questioned the tester to narrow alternatives frame contexts
confirm tell answers
give approval 7

Used a questioning tone began with/trailed off with "I guess" 8

Left ideas unfinished trailed off with "...or something"/"...whatever..." 9

_____/_______ answers referred to "you"/what "you do" with objects/"Like when you.." 10

_____/_______ answers referred to "I"/immediate family/other personal pronouns 11

Was conversational/chatty very interactive playful/joking 12

Observed that the tester needed more room/time to write 13

Asked "Am I going too fast?" dictated words slowly 14

Told the tester to "Wait"/"Skip that"/"Keep going..." 15

Switched roles and asked the question back 16

Made personal comments comments about the test/asked what it was for 17

Gave perfunctory answers acted bored/impatient tapped while waiting 18

Became physically restless fiddled with objects jiggled leg 19

Got up and walked around Inattentive/asked "What?" 20

Sighed acted weary yawned 21

Had to be questioned _____/_____ times to clarify answers what were incomplete
circular
too general
off-target 22

Improved with questioning guessed when urged 23

Said "Don't know" and then responded adequately 24

Criticized own productions excused own failures apologized for missing 25

Became agitated refused to continue walked out 26

Used elaborate forms/plays on words Said "I would say..."/"To me, it's...." 27

Noted that tester wrote everything down said "Don't write that" 28

Similarities

C-I

Verbal classification and abstraction skills:

Used a questioning tone · said "Don't know" began/ended with "I guess" 1

Said "Don't know" and then responded 2

Asked for repetition of stimulus word asked what was wanted 3

Demonstrated with gestures used helpless gestures 4

Questioned the tester to define words narrow alternatives
confirm words frame contexts
tell answers 5

Reacted to only one word of the pair had to be questioned 6

Did not understand instructions had to be prompted to classify 7

Left ideas unfinished trailed off with "or something like that"/"whatever" 8

Was very interactive commented about the tester/the test asked what it was for 9

_____/_____items were addressed to "you" 10

_____/_____items were personalized used asides/references to others 11

When stuck, laughed joked played on words 12

Said "no" "go ahead" "wait" 13

Had to be urged to guess said items were "hard" apologized gave 'little' laugh 14

Criticized own responses asked for approval/comparisons with others 15

Improved if questioned 16

Reads Vocabulary List

Reading:

Asked Right now? Ready? Aloud? 1

Tried items as chosen by the tester Skipped 2

Would try no more "That's all" "Don't know any more" Said "No" w/o guessing 3
Then did more Then did more when urged

Did more when urged When given approval 4

Corrected errors when asked to check When asked to try again 5

Asked "Do them all?" 6
Predicted failure gave up "too hard" "don't know" "can't"

Commented on own ability positively negatively 7

Sounded out words showing no recognition till the word was repeated 8

Used a questioning tone not sure right? shakey voice sweaty hands 9
Looked at the tester after each word/sound

Used helpless gestures held head 10
Ended with "whatever" "or something" "you know" 11

Shook head "no" said nothing looked at the wall 12

Put hands over face , mouth 13

Mumbled very soft voice 14

Moved about got up walked around fiddled with things 15

Sighed looked weary yawned 16
Sounded annoyed impatient tapped looked bored 17

Pronounced words mechanically without expression as in a drill 18

Referred to words by number
Read the number of each word too 19

C-I

Manipulation of spatial configurations and geometric forms:

Recalled the test from previous experience 1

Predicted failure/"trouble with these"   required urging 2

Asked what was wanted   "start now?" 3

Remembered directions   tried to take materials   "Know how already" 4

Seemed nervous   hands shook   mentioned clinicians/mental states/asked reason 5

Commented on time   asked about own speed   watched timer   obviously hurried 6

Did only demonstrated items 7

Mirrored/did items upside down 8

Pushed work toward tester when done 9

Corrected details if asked to check work 10

Checked own work against pattern spontaneously before saying "Done" 11

Failed first independent item(s) but then improved 12

Moved body/booklet/design about to orient 13

Was very interactive   commented on tester/the test   joked   laughed 14

Wanted to know if sides should match demonstrated model 15

Hummed   sang   made noises 16

Talked to blocks   verbalized frustrations/strategies while making moves 17

Criticized/encouraged/congratulated self   asked score/how others did 18

Waited for tester to scramble blocks/turn pages 19

Took over materials   tried to re-form designs without scrambling 20

Began playing with blocks   made pattern in box when putting away 21

Sighed   yawned   made helpless gestures   worked with head on hand/arm 22

Said "I know I can do it"/"Will get it yet"   Continued past time 23

Gave up but continued when urged/prompted   applied strategy when shown 24

Gave up but would not continue when urged   pushed blocks away forcefully 25

Picture Arrangement

Understanding gestures and action sequences/consequences

Recalled from previous testing   told the tester the directions 1
Assembled cards in a perfunctory way   made wild guesses 2
Did not seem to know what was wanted   Asked "Put them together?" 3
Commented on being timed   looked at the timer   obviously hurried 4
Asked for confirmation   about time   about score 5
Worked from right to left   assembled sequences backwards
Turned work to face the tester when done 6
Pushed work toward the tester when done 7
Talked to self   talked to cards   told story while assembling   directed self 8
Was very interactive   made personal comments   commented on the test   laughed 9
Looked at numbers on the back   wanted help from tester 10
Stacked the cards 11
Pushed cards toward the tester when giving up 12
Asked "How much more?" "Is this all?" "Can I go...?" 13
Associated items with personal experience spontaneously   commented on figures 14
Told stories when asked   corrected errors when asked 15
Commented on surprize or pleasure when correct 16
Checked work   corrected errors spontaneously   commented on ambiguous items 17
Said items were "Hard" "Don't make sense"   "getting harder/longer" 18
Failed first independent item, but then improved 19
Continued past time 20

Object Assembly

Recognition of Gestalts from fragments, and assembly of parts:

Recalled from previous testing 1
Said "Hard" "Getting harder"   Predicted failure/"trouble with these" 2
Asked "Put them together?" "Start now?" what to do 3
Said "Can't do it"   gave up   had to be encouraged to try 4
Asked if/thought a piece was missing   turned pieces over 5
Asked what the item was   asked for help   for confirmation 6
Guessed aloud   commented on the items appearance   labelled parts 7
Verbalized steps   talked to the pieces   directed self aloud 8
Tried to peek around the screen   was very interactive   laughed 9
Commented on being timed   looked at the timer   obviously hurried 10
Made personal comments   commented on the tester/the test   asked what it was for 11
Sang   hummed   made animal/car noises 12
Asked for approval   how other students did 13
Yawned   looked bored   tapped   asked "How many more?"/"Can I go?" 14
Assembled upside down 15
Turned item to face tester   pushed toward tester 16
Said "Can't do it" but kept on working 17
Commented on success with surprise or pleasure 18
Gave up   pushed pieces away 19
Corrected errors spontaneously 20

Visual awareness of physical and mechanical details:

Recalled from previous testing 1

Said "Hard"   "getting harder"   Predicted failure/"trouble with these" 2

Asked what was wanted/"turn the page?"   had to be told to proceed 3

Asked if something was missing from every item 4

Used a questioning tone   wanted confirmation 5

Began with/added "I guess"/"Maybe"   Said items were "tricky" 6

Was very interactive   commented on the tester/the test   Asked what it was for 7

When stuck, asked for help   laughed   joked 8

Asked if "going too fast?"   commented on tester writing 9

Answered after saying "Don't know"   Said "Wait" 10

Guessed wrongly on _____/_____items and said "Don't know" on ______ items 11

Reviewed details aloud   talked to pictures   commented on items 12

Went overtime   went back to items   corrected self after 'double-take' 13

Oral Arithmetic

Oral arithmetic:

Looked at tester after each response when counting/subtracting blocks 1

Predicted failure/"trouble with math" 2

Asked what was wanted/what to do on first item 3

Asked for repetitions on ______/_____ items 4

"Heard" wrong information   substituted numbers/operations 5

Argued about what tester said   "thought you said" 6

Repeated items in a questioning tone   questioned back 7

Asked for confirmation 8

Commented on being timed   obviously hurried 9

Interrupted before tester finished reading the problem 10

Began/ended with "I think"/"I hope"   said items were "Hard"/"getting harder" 11

Gave up   said "Don't know"/"Can't do it"   refused to try/said "No" 12

Said items were "easy" 13

Was restless   moved about   fiddled   made irrelevant comments 14

Guessed   approximated amounts   laughed   joked   commented on tester/test 15

Personalized answer by referring to actions of self or others 16

Said could do it with pencil and paper   asked for pencil and paper 17

Used pencil even though told not to 18

Told the tester to "Wait"/"Skip that"/"Go on" 19

Digit Span

C-I

Repeating and Reversing Digits:

Predicted difficulty/failure   moaned   exclaimed at task 1
Asked "What?"/for repetitions   what to do 2
Had to be urged   shook head "no" 3
Used a questioning tone 4
Ended with "Something like that"/"Whatever" 5
Gave a silly answer   laughed 6
Made personal comments   commented on the tester/the test   asked "What's it for?" 7
Asked how others do 8
Gave up   said "I forget/can't think"/"don't want to"/"messed up" 9

Coding

Transposing clerical marks:

Moaned   exclaimed at the task 1
Asked what to do 2
Asked "Start now?"   looked at/commented on time   asked score 3
Stopped at the end of a line and had to be told to keep on 4
Asked for more direction 5
Reversed marks   reversed direction 6
Sang   hummed   said numbers aloud/to self   named marks 7
Did not wait for timer   continued after time was called 8
Changed rules and began doing all instances of one mark 9

Sentence completion/Writing

Writing:

Tester helped with reading   spelling   prompted   wrote for 1
When could not think   very slow

Tried to get tester to frame ideas 2

When dictating, became less fluent   grammar deteriorated 3

_______ sentences were directed at "you" 4

Echoed directives   comments   gossip   cliches 5

Gave advice   directives 6

Referred to self as "I" ________/_______ times 7

Made _______ unspecified pronoun references to "him", "her", "it", "them" 8

Responded to ____stems as questions 9

[illegible]   CASE #   AGE   BIRTHDATE

APPENDIX C-II

Preliminary Rubric for Classifying Dependency/Interaction Variables for the Skill Inventory

I. Response style

- A. Task Avoidance (Cannot answer)
- B. Special Task Avoidance (Leave the field, show disinterest)
- C. Display Uncertainty/Risk-taking/Redundancy (Cannot choose)
- D. Self-monitoring (Spontaneous improvement)
- E. Express Defeatism
- F. Use Inappropriate Response Style/Refuse
- G. Act Tired

II. Help-seeking Behavior

- A. Clarification of Instructions
- B. Put Out Cues for/Get Assistance, Prodding, Focusing
- C. Express Uncertainty
- D. Seek Feedback/Reinforcement on Response
- E. Seek Approval/Personal Interactions

III. Use of Referents (Identity)

- A. Personal Input and Internal Referents (centering self as problem-solver)
- B. External Referents (loss of self, design/action/solution located in others, self made "small")
- C. Global Perception of Others (omnipresent, their understanding taken for granted)

IV. Positive Response Style

- A. Goal-oriented Behavior
- B. Task Cooperation
- C. Take charge

1.2.1 Movement

(18) Tapped

(19) Jiggled/fiddled/rolled pencil/made hand or leg movement.

(20) Played with block/made a pattern with materials.

(21) Brushed hair, unwrapped gum or food, took off coat (used some object).

(22) Fidgeted or moved about/tilted chair (whole body movements).

(23) Scratched/rubbed eyes/cracked knuckles (did something to self).

(24) Sighed

(25) Yawned/stretched

1.2.2 Talk

(26) Verbalized steps/solved problems outloud. Whispered or talked to/directed/questioned/outloud, e.g. "How could you...?" Score two points if gave a story while assembling on subtest 06. Score two points if guessed/labeled part outloud on subtest 07. Score two points if reviewed details outloud on subtest 08. Score two points if said numbers outloud on subtest 12.

(27) Repeated items/directions/words/numbers. Repeated numbers forward first, or directions, on subtest 11.

(28) Used fillers ("um/uh/well/etc")

1.2.3 Noises

(29) Hummed/sang/whistled/made noises/whispered to self on subtest 11.

APPENDIX C - II

SAMPLE PAGES FROM THE SCORING MANUAL FOR PERSONAL INTERACTIONS

Directions for scoring personal interaction variables from the Skill Inventory.

1. Generalized Reactions

1.1 Total dependence/undifferentiated relationships with others, including the tester.

1.1.1 Use of pronouns

(4) Referred to self as "I".

(5) Referred to "you". Gives a score of 2 if there is at least one occurennce in every five items attempted.

For subtest 13 give a score of 2 if there are two or more occurrences per protocol.

(6) Referred to "we/us/our".

(7) Referred to "you/her/he/she/his/hers."

(8) Referred to "them/they/theirs/every- any- some-body/ or someone/others/names."

1.1.2 Echoed others

(9) A cliche, parents' assist patriotic, religious ("I dream of Jeannie",) go/fly (to the moon, boys will be boys, I feel like a million bucks.)

(10) Family conversation, "Other boys/girls outside, now can I go?" "I would like cookies please" "I want to know how long before we eat" "I want to go to bed/ go home/I'm tired" "I'm sorry about/I goofed Mom"

(11) Social. "I want to know if you are mad" "I want to know how things are with you" "I am sorry dear for saying that." "I did not call you last night" "I can't stay" "We can't talk any more"

(12) Formal. "My father isn't at home will come back later" "I'm sorry to disturb you I have a telephone call" "I want to know how you got in"

1.1.3 Sees tester as guide

(13) Lets tester guide responses. Score 1 for "looked up at tester". Score 2 if indicated that student took cues from the tester. "Nothing else...no room" "Not right, I can tell because you didn't say anything" "Oh you don't want that" "Tell me if it's wrong so I'll do it over"

(14) Performed from tester's standpoint. Subtest 06: worked from right to left, backwards; failed first independent item. Subtest 07: assembled upside down. Subtest 10: Mirrored/failed first picture of independent item. Subtest 12: reversed marks.

1.1.4 Assumed tester has some thoughts and can or will finish ideas.

(15) Shook head "no" Score 2 if did not respond.

(16) Used hands to gesture. Score 2 points for pointing up objects. Score 2 points for winter "like we got right now" Score 1 point for pointing on subtest 08.

(17) Trailed off, assuming "you" would have some thoughts and finish idea. "You know...what it is/how it goes/ what I mean"; "however you/whatever you want to say/ want me to say/say it"; "you might say that..." "...a whatcha call it" This variable not included in variable number five (5) ("you" responses). Referred to "it"/"this"/"that/"

1.2 Extraneous responses that did not affect the test or tester.

```
                  V5          V8          V15         V16         V17         V18         V19         V21         V22         V24         V25         V27         V30
                        1           2           3           4           5           6           7           8           9          10          11          12          13

V91          51    0.154       0.700      -0.054      -0.036      -0.029      -0.020      -0.020      -0.020      -0.020      -0.020       0.484       0.287       0.241
V94          52    0.154       0.700      -0.054      -0.036      -0.029      -0.020      -0.020      -0.020      -0.020      -0.020       0.404       0.287       0.241
V103         53    0.050      -0.096      -0.177      -0.118      -0.096      -0.067      -0.067       0.305      -0.067      -0.067      -0.138      -0.055      -0.159
V109         54    0.071      -0.042      -0.077      -0.052      -0.042      -0.029      -0.029      -0.029      -0.029      -0.029      -0.060      -0.078      -0.121
V113         55    0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0
V116         56   -0.077      -0.042       0.137      -0.052      -0.042       0.700      -0.029      -0.029      -0.029      -0.029      -0.060      -0.078       0.112
V117         57    0.103      -0.060      -0.111      -0.075      -0.060       0.484      -0.042      -0.042      -0.042      -0.042      -0.087      -0.113      -0.007
V118         58   -0.112       0.316      -0.111      -0.075      -0.060      -0.042      -0.042       0.484      -0.042      -0.042       0.185       0.240       0.329
V119         59   -0.092      -0.050      -0.092      -0.061       0.446       0.312      -0.035      -0.035      -0.035      -0.035      -0.072       0.139       0.188
V121         60    0.071      -0.042       0.137      -0.052      -0.042      -0.029      -0.029      -0.029      -0.029       0.700      -0.060      -0.078       0.112
V122         61   -0.054      -0.029      -0.054      -0.036      -0.029      -0.020      -0.020      -0.020      -0.020      -0.020      -0.042      -0.055      -0.085
V124         62    0.154      -0.029      -0.054      -0.036      -0.029      -0.020      -0.020      -0.020      -0.020      -0.020      -0.042      -0.055       0.241
V128         63   -0.054      -0.029      -0.054      -0.036      -0.029      -0.020      -0.020       1.000      -0.020      -0.020      -0.042      -0.055      -0.085
V131         64   -0.226       0.479       0.351      -0.052      -0.042      -0.029      -0.029      -0.029      -0.029      -0.029      -0.060       0.166      -0.121
V132         65   -0.262      -0.029      -0.054      -0.036      -0.029      -0.020      -0.020      -0.020      -0.020      -0.020      -0.042      -0.055      -0.085
V133         66   -0.262      -0.029      -0.054      -0.036      -0.029      -0.020      -0.020      -0.020      -0.020      -0.020      -0.042      -0.055      -0.085
V136         67   -0.171      -0.127       0.045       0.030      -0.127      -0.089       0.229       0.229      -0.089      -0.089      -0.020      -0.132      -0.065
V138         68   -0.090      -0.048       0.035      -0.060      -0.048      -0.034      -0.034      -0.034      -0.034      -0.034      -0.070      -0.091      -0.141
V139         69    0.027      -0.052      -0.095      -0.064      -0.052      -0.036      -0.036      -0.036      -0.036      -0.036      -0.075      -0.097      -0.150
V140         70   -0.069      -0.082      -0.031      -0.102       0.212      -0.058      -0.058       0.354       0.354      -0.058       0.093      -0.155       0.024
V141         71   -0.096      -0.052      -0.095      -0.064      -0.052      -0.036      -0.036      -0.036      -0.036      -0.036      -0.075       0.307       0.042
V144         72   -0.053      -0.064      -0.118      -0.079      -0.064      -0.045      -0.045      -0.045      -0.045      -0.045      -0.092      -0.120      -0.084
V147         73    0.068      -0.068       0.014      -0.084      -0.068      -0.048      -0.048      -0.048      -0.048      -0.048      -0.098      -0.128      -0.198
V148         74   -0.004      -0.060       0.043      -0.075      -0.060       0.484      -0.042       0.484      -0.042      -0.042      -0.087      -0.113      -0.007
V149         75    0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0         0.0
```

CORRELATION MATRIX

APPENDIX C-III
Correlation Matrix for WISC Comprehension Personal Interaction Variables

		V5 1	V8 2	V15 3	V16 4	V17 5	V18 6	V19 7	V21 8	V22 9	V24 10	V25 11	V27 12	V30 13
V5	1	1.000												
V8	2	-0.077	1.000											
V15	3	-0.265	0.351	1.000										
V16	4	0.027	-0.052	0.081	1.000									
V17	5	0.071	-0.042	-0.077	-0.052	1.000								
V18	6	-0.054	-0.029	-0.054	-0.036	-0.029	1.000							
V19	7	-0.054	-0.029	0.545	-0.036	-0.029	-0.020	1.000						
V21	8	-0.054	-0.029	-0.054	-0.036	-0.029	-0.020	-0.020	1.000					
V22	9	0.154	-0.029	-0.054	-0.036	0.700	-0.020	-0.020	-0.020	1.000				
V24	10	-0.054	-0.029	-0.054	-0.036	-0.029	-0.020	-0.020	-0.020	-0.020	1.000			
V25	11	-0.004	0.316	-0.111	-0.075	-0.060	-0.042	-0.042	-0.042	-0.042	-0.042	1.000		
V27	12	-0.215	0.411	0.056	-0.097	0.166	-0.055	-0.055	-0.055	-0.055	-0.055	0.417	1.000	
V30	13	-0.025	0.112	-0.224	-0.150	0.112	0.241	-0.085	-0.085	-0.085	0.241	0.329	0.319	1.000
V31	14	-0.054	-0.029	-0.054	-0.036	-0.029	-0.020	-0.020	-0.020	-0.020	-0.020	-0.042	-0.055	0.241
V32	15	-0.054	-0.029	-0.054	-0.036	-0.029	1.000	-0.020	-0.020	-0.020	-0.020	-0.042	-0.055	0.241
V33	16	-0.054	-0.029	-0.054	-0.036	-0.029	-0.020	-0.020	-0.020	-0.020	-0.020	-0.042	-0.055	-0.085
V34	17	0.070	-0.058	-0.108	0.271	-0.058	-0.041	-0.041	-0.041	-0.041	-0.041	-0.084	-0.109	0.017
V36	18	0.220	-0.042	-0.077	0.378	-0.042	-0.029	-0.029	-0.029	-0.029	-0.029	-0.060	-0.078	-0.121
V37	19	-0.219	-0.060	-0.111	0.236	-0.060	-0.042	-0.042	-0.042	-0.042	-0.042	-0.087	0.064	0.161
V39	20	0.152	-0.089	0.170	0.349	-0.089	0.327	0.327	-0.062	-0.062	-0.062	-0.129	-0.167	-0.134
V42	21	-0.041	-0.127	-0.142	0.405	-0.127	-0.089	-0.089	0.229	-0.089	0.229	-0.020	-0.239	-0.167
V43	22	0.210	-0.060	-0.111	-0.075	0.316	-0.042	-0.042	-0.042	-0.042	-0.042	-0.087	0.064	0.329
V44	23	-0.060	0.138	0.002	-0.134	0.138	-0.076	-0.076	0.269	-0.076	-0.076	-0.157	0.143	0.236
V45	24	-0.004	-0.060	0.198	-0.075	-0.060	-0.042	0.484	-0.042	-0.042	-0.042	-0.087	-0.113	-0.007
V46	25	0.169	-0.048	-0.090	-0.060	-0.048	-0.034	-0.034	-0.034	-0.034	-0.034	-0.070	-0.091	0.130
V47	26	-0.042	0.230	0.172	-0.054	-0.181	-0.127	0.161	0.161	-0.127	-0.127	0.036	0.239	0.118
V48	27	-0.054	-0.029	-0.054	-0.036	-0.029	-0.020	-0.020	-0.020	-0.020	-0.020	-0.042	-0.055	-0.085
V49	28	-0.149	-0.147	-0.271	-0.004	0.284	-0.103	-0.103	0.199	0.199	0.199	-0.056	-0.073	0.152
V51	29	-0.096	-0.052	-0.095	-0.064	-0.052	-0.036	-0.036	-0.036	-0.036	-0.036	-0.075	0.105	0.234
V54	30	0.154	-0.029	-0.054	-0.036	-0.029	-0.020	-0.020	-0.020	-0.020	-0.020	-0.042	-0.055	-0.085
V62	31	-0.143	0.083	0.154	-0.069	0.083	0.058	0.058	0.058	0.058	0.058	0.120	0.059	0.242
V64	32	-0.029	0.102	0.084	0.126	0.102	-0.286	0.071	0.071	0.071	0.071	-0.037	0.072	-0.046
V65	33	0.103	-0.060	-0.111	-0.075	-0.060	0.484	-0.042	-0.042	-0.042	-0.042	-0.087	-0.113	0.161
V66	34	0.029	-0.204	-0.293	-0.084	-0.204	-0.143	-0.143	-0.143	-0.143	0.143	-0.147	0.096	0.137
V67	35	-0.060	0.138	-0.200	-0.134	-0.108	0.269	-0.076	0.269	-0.076	-0.076	0.021	0.028	0.125
V69	36	0.070	-0.058	-0.108	-0.072	-0.058	-0.041	-0.041	-0.041	-0.041	-0.041	-0.084	-0.109	-0.076
V73	37	-0.069	0.212	-0.031	-0.102	-0.082	-0.058	-0.058	-0.058	-0.058	-0.058	0.093	-0.017	0.024
V74	38	0.027	-0.052	-0.095	0.291	-0.052	-0.036	-0.036	-0.036	-0.036	-0.036	-0.075	-0.097	0.042
V75	39	0.154	-0.029	-0.054	-0.036	-0.029	-0.020	-0.020	-0.020	-0.020	-0.020	-0.042	-0.055	0.241
V77	40	-0.262	-0.029	-0.054	-0.036	-0.029	-0.020	-0.020	-0.020	-0.020	-0.020	-0.042	-0.055	-0.085
V78	41	-0.077	-0.042	-0.077	-0.052	-0.042	-0.029	-0.029	-0.029	-0.029	-0.029	-0.060	-0.078	-0.121
V79	42	-0.054	-0.029	-0.054	-0.036	-0.029	1.000	-0.020	-0.020	-0.020	-0.020	-0.042	-0.055	0.241
V80	43	-0.453	0.144	0.267	-0.119	-0.217	-0.152	0.101	0.354	-0.152	0.101	0.078	-0.068	0.016
V81	44	0.154	0.700	-0.054	-0.036	-0.029	-0.020	-0.020	-0.020	-0.020	-0.020	0.484	0.287	0.241
V82	45	-0.218	0.378	0.258	-0.064	-0.052	-0.036	-0.036	-0.036	-0.036	-0.036	-0.075	0.105	-0.150
V83	46	0.154	-0.029	-0.054	-0.036	-0.029	-0.020	-0.020	-0.020	-0.020	-0.020	-0.042	-0.055	-0.085
V84	47	0.154	-0.029	-0.054	-0.036	-0.029	-0.020	-0.020	-0.020	-0.020	-0.020	-0.042	-0.055	0.241
V85	48	0.154	-0.029	-0.054	-0.036	-0.029	-0.020	-0.020	-0.020	-0.020	-0.020	-0.042	-0.055	0.241
V87	49	0.154	-0.029	-0.054	-0.036	-0.029	-0.020	-0.020	-0.020	-0.020	-0.020	-0.042	-0.055	-0.085
V89	50	-0.054	-0.029	-0.054	-0.036	-0.029	-0.020	-0.020	-0.020	-0.020	-0.020	-0.042	-0.055	-0.085

```
              V31      V32      V33      V34      V36      V37      V39      V42      V43      V44      V45      V46      V47
                  14       15       16       17       18       19       20       21       22       23       24       25       26

V131      64  -0.029   -0.029   -0.029   -0.058   -0.042   -0.060   -0.089    0.100   -0.060    0.138   -0.060   -0.048    0.025
V132      65  -0.020   -0.020   -0.020    0.251   -0.029   -0.042   -0.062   -0.089   -0.042   -0.076   -0.042   -0.034   -0.127
V133      66  -0.020   -0.020   -0.020    0.251   -0.029   -0.042   -0.062   -0.089   -0.042   -0.076   -0.042   -0.034   -0.127
V136      67   0.229   -0.089    0.229    0.094    0.100    0.309    0.214    0.206   -0.184   -0.009   -0.020   -0.148    0.255
V138      68  -0.034   -0.034   -0.034    0.174   -0.048   -0.070    0.058    0.116   -0.070    0.017    0.149   -0.056   -0.210
V139      69  -0.036   -0.036   -0.036   -0.072    0.378   -0.075   -0.110    0.030    0.236    0.069    0.236    0.190   -0.224
V140      70  -0.058   -0.058   -0.058   -0.115   -0.082    0.093   -0.176    0.005   -0.119    0.064   -0.119   -0.096   -0.009
V141      71  -0.036   -0.036   -0.036   -0.072   -0.052    0.236   -0.110    0.030   -0.075    0.069   -0.075   -0.060    0.115
V144      72  -0.045   -0.045   -0.045    0.093   -0.064   -0.092   -0.136   -0.096    0.072   -0.058   -0.092    0.191    0.083
V147      73  -0.048   -0.048   -0.048    0.041   -0.068   -0.098   -0.145   -0.059   -0.098   -0.177   -0.098   -0.079   -0.161
V148      74  -0.042    0.484   -0.042   -0.084   -0.060   -0.087    0.072   -0.020   -0.087    0.021   -0.087   -0.070    0.184
V149      75   0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
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		V31 14	V32 15	V33 16	V34 17	V36 18	V37 19	V39 20	V42 21	V43 22	V44 23	V45 24	V46 25	V47 26
V31	14	1.000												
V32	15	-0.020	1.000											
V33	16	-0.020	-0.020	1.000										
V34	17	-0.041	-0.041	-0.041	1.000									
V36	18	-0.029	-0.029	-0.029	0.358	1.000								
V37	19	-0.042	-0.042	-0.042	0.217	0.316	1.000							
V39	20	-0.062	0.327	-0.062	0.098	0 189	0.273	1.000						
V42	21	-0.089	-0.089	0.229	0.004	0.100	-0.020	0.092	1.000					
V43	22	-0.042	-0.042	-0.042	-0.084	0.316	-0.087	-0.129	-0.020	1.000				
V44	23	0.269	-0.076	-0.076	0.045	0.138	0.021	-0.232	-0.224	0.377	1.000			
V45	24	-0.042	-0.042	-0.042	0.217	-0.060	-0.087	0.072	-0.104	-0.087	0.199	1.000		
V46	25	-0.034	-0.034	-0.034	-0.068	0.254	-0.070	-0.104	-0.148	0.586	0.447	-0.070	1.000	
V47	26	0.161	-0.127	0.161	-0.253	-0.181	0.184	0.053	-0.104	-0.113	0.210	0.036	0.029	1.000
V48	27	-0.020	-0.020	-0.020	-0.041	-0.029	-0.042	-0.062	-0.089	-0.042	-0.076	-0.042	-0.034	0.161
V49	28	-0.103	-0.103	0.199	0.053	0.069	0.411	-0.083	0.305	0.100	0.026	-0.212	-0.045	-0.041
V51	29	-0.036	-0.036	-0.036	0.271	-0.052	0.236	-0.110	-0.158	-0.075	0.476	0.546	-0.060	0.115
V54	30	-0.020	-0.020	-0.020	-0.041	-0.029	-0.042	-0.062	-0.089	-0.042	-0.076	-0.042	-0.034	0.161
V62	31	0.058	0.058	0.058	0.117	0.083	0.120	-0.045	-0.018	0.120	0.217	-0.030	0.097	0.197
V64	32	0.071	-0.286	0.071	0.143	0.102	0.147	0.082	0.089	0.147	0.145	-0.221	0.119	0.141
V65	33	-0.042	0.484	-0.042	-0.084	-0.060	-0.087	0.072	-0.020	-0.087	0.021	0.185	-0.070	0.036
V66	34	0.143	-0.143	-0.143	0.041	0.204	0.295	-0.109	0.089	0.147	0.048	-0.147	0.237	0.081
V67	35	0.269	0.269	-0.076	-0.053	-0.108	0.021	0.032	-0.009	-0.157	0.184	-0.157	0.017	0.113
V69	36	-0.041	-0.041	-0.041	0.085	-0.058	-0.084	-0.125	0.004	-0.084	-0.152	-0.084	-0.068	-0.089
V73	37	0.354	-0.058	-0.058	0.002	-0.082	-0.119	-0.176	0.005	-0.119	-0.075	-0.119	-0.096	-0.125
V74	38	-0.036	-0.036	-0.036	0.443	0.378	0.236	0.119	0.030	-0.075	0.069	0.236	-0.060	-0.054
V75	39	-0.020	-0.020	-0.020	0.542	-0.029	-0.042	-0.062	-0.089	-0.042	-0.076	-0.042	-0.034	-0.127
V77	40	-0.020	-0.020	-0.020	0.251	-0.029	-0.042	-0.062	-0.089	-0.042	-0.076	-0.042	-0.034	-0.127
V78	41	-0.029	-0.029	0.700	-0.058	-0.042	-0.060	-0.089	0.327	-0.060	-0.108	-0.060	-0.048	0.025
V79	42	-0.020	1.000	-0.020	-0.041	-0.029	-0.042	0.327	-0.089	-0.042	-0.076	-0.042	-0.034	-0.127
V80	43	-0.152	-0.152	0.101	-0.087	-0.217	0.209	-0.077	0.126	-0.313	-0.051	0.078	-0.252	0.271
V81	44	-0.020	-0.020	-0.020	-0.041	-0.029	-0.042	-0.062	-0.089	-0.042	-0.076	-0.042	-0.034	0.161
V82	45	-0.036	-0.036	-0.036	-0.072	-0.052	-0.075	-0.110	0.030	-0.075	0.069	-0.075	-0.060	0.115
V83	46	-0.020	-0.020	-0.020	-0.041	-0.029	-0.042	-0.062	-0.089	-0.042	-0.076	-0.042	-0.034	0.161
V84	47	-0.020	-0.020	-0.020	-0.041	-0.029	-0.042	-0.062	-0.089	0.484	0.269	-0.042	0.014	0.161
V85	48	-0.020	-0.020	-0.020	-0.041	-0.029	-0.042	-0.062	-0.089	-0.042	0.269	0.484	-0.034	0.161
V87	49	-0.020	-0.020	-0.020	-0.041	-0.029	-0.042	0.327	0.229	-0.042	-0.076	-0.042	-0.034	0.161
V89	50	-0.020	-0.020	-0.020	-0.041	-0.029	-0.042	-0.062	-0.089	-0.042	-0.076	-0.042	-0.034	-0.127
V91	51	-0.020	-0.020	-0.020	-0.041	-0.029	-0.042	-0.062	-0.089	-0.042	-0.076	-0.042	-0.034	0.161
V94	52	-0.020	-0.020	-0.020	-0.041	-0.029	-0.042	-0.062	-0.089	-0.042	-0.076	-0.042	-0.034	0.161
V103	53	0.305	-0.067	-0.067	-0.028	-0.096	-0.138	0.080	0.056	-0.138	0.003	-0.138	-0.111	0.109
V109	54	-0.029	-0.029	-0.029	-0.058	-0.042	-0.060	-0.089	-0.127	-0.060	0.138	-0.060	0.254	0.025
V113	55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
V116	56	-0.029	0.700	-0.029	-0.058	-0.042	-0.060	0.468	-0.127	-0.060	-0.108	-0.060	-0.048	-0.181
V117	57	-0.042	0.484	-0.042	-0.084	-0.060	-0.087	0.273	-0.020	-0.087	-0.157	0.185	-0.070	0.036
V118	58	0.484	-0.042	-0.042	-0.084	-0.060	0.185	-0.129	-0.020	-0.087	0.377	-0.087	-0.070	0.333
V119	59	-0.035	0.312	-0.035	-0.069	-0.050	0.286	0.291	-0.151	0.286	0.105	-0.072	-0.058	-0.020
V121	60	-0.029	-0.029	-0.029	-0.058	-0.042	-0.060	-0.089	0.100	-0.060	-0.108	-0.060	-0.048	-0.181
V122	61	-0.020	-0.020	-0.020	-0.041	-0.029	-0.042	-0.062	0.229	-0.042	-0.076	-0.042	-0.034	-0.127
V124	62	-0.020	-0.020	-0.020	0.542	-0.029	-0.042	-0.062	-0.089	-0.042	-0.076	-0.042	-0.034	-0.127
V128	63	-0.020	-0.020	-0.020	-0.041	-0.029	-0.042	-0.062	0.229	-0.042	0.269	-0.042	-0.034	0.161

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              V48       V49       V51       V54       V62       V64       V65       V66       V67       V69       V73       V74       V75
                   27        28        29        30        31        32        33        34        35        36        37        38        39

V48      27     1.000
V49      28    -0.103     1.000
V51      29    -0.036    -0.004     1.000
V54      30    -0.020     0.199    -0.036     1.000
V62      31     0.058     0.034     0.103    -0.233     1.000
V64      32     0.071     0.042    -0.084     0.071     0.408     1.000
V65      33    -0.042    -0.212     0.236    -0.042     0.120    -0.405     1.000
V66      34    -0.143     0.211    -0.084     0.143    -0.163    -0.100    -0.147     1.000
V67      35    -0.076     0.230     0.069     0.269    -0.276    -0.097     0.021     0.145     1.000
V69      36    -0.041    -0.033    -0.072    -0.041    -0.216    -0.265    -0.084     0.122     0.045     1.000
V73      37    -0.058     0.075    -0.102    -0.058    -0.306    -0.086    -0.119     0.173     0.481     0.120     1.000
V74      38    -0.036     0.174     0.291    -0.036     0.103    -0.084     0.236    -0.084     0.069    -0.072     0.141     1.000
V75      39    -0.020    -0.103    -0.036    -0.020     0.058     0.071    -0.042     0.143    -0.076     0.251    -0.058    -0.036     1.000
V77      40    -0.020     0.199    -0.036    -0.020     0.058     0.071    -0.042    -0.143     0.269    -0.041     0.354     0.565    -0.020
V78      41    -0.029     0.069    -0.052    -0.029     0.083     0.102     0.316    -0.204    -0.108    -0.058    -0.082    -0.052    -0.029
V79      42    -0.020    -0.103    -0.036    -0.020     0.058    -0.286     0.484    -0.143     0.269    -0.041    -0.058    -0.036    -0.020
V80      43    -0.152     0.060     0.030    -0.152     0.289    -0.088     0.078    -0.071    -0.051    -0.087    -0.122     0.030     0.101
V81      44    -0.020    -0.103    -0.036    -0.020     0.058     0.071    -0.042    -0.143     0.269    -0.041     0.354    -0.036    -0.020
V82      45    -0.036    -0.004    -0.064    -0.036     0.103    -0.084    -0.075    -0.084    -0.134     0.271    -0.102    -0.064    -0.036
V83      46    -0.020     0.199    -0.036     1.000    -0.233     0.071    -0.042     0.143     0.269    -0.041    -0.058    -0.036    -0.020
V84      47    -0.020    -0.103    -0.036    -0.020     0.058     0.071    -0.042     0.143    -0.076    -0.041    -0.058    -0.036    -0.020
V85      48    -0.020    -0.103     0.565    -0.020     0.058    -0.286     0.484    -0.143    -0.076    -0.041    -0.058     0.565    -0.020
V87      49    -0.020    -0.103    -0.036    -0.020     0.058     0.071    -0.042     0.143     0.269    -0.041    -0.058    -0.036    -0.020
V89      50    -0.020    -0.103    -0.036    -0.020    -0.525    -0.286    -0.042     0.143     0.269     0.542     0.354    -0.036    -0.020
V91      51    -0.020    -0.103    -0.036    -0.020     0.058     0.071    -0.042    -0.143     0.269    -0.041     0.354    -0.036    -0.020
V94      52    -0.020    -0.103    -0.036    -0.020     0.058     0.071    -0.042    -0.143     0.269    -0.041     0.354    -0.036    -0.020
V103     53    -0.067    -0.007    -0.118    -0.067    -0.340    -0.026    -0.138     0.052     0.505     0.079     0.411     0.101    -0.067
V109     54    -0.029     0.284    -0.052     0.700    -0.125     0.102    -0.060     0.204     0.384    -0.058    -0.082    -0.052    -0.029
V113     55     0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0
V116     56    -0.029    -0.147    -0.052    -0.029     0.083    -0.153     0.316    -0.204     0.138    -0.058    -0.082    -0.052    -0.029
V117     57    -0.042    -0.212    -0.075    -0.042    -0.030    -0.405     0.457     0.147     0.199    -0.084    -0.119    -0.075    -0.042
V118     58    -0.042     0.100     0.236    -0.042     0.120     0.147    -0.087     0.000     0.555    -0.084     0.306    -0.075    -0.042
V119     59    -0.035     0.236    -0.061    -0.035     0.099     0.000     0.107    -0.049    -0.012    -0.069    -0.098    -0.061    -0.035
V121     60    -0.029     0.069    -0.052    -0.029     0.083    -0.153    -0.060    -0.000    -0.108    -0.058    -0.082    -0.052    -0.029
V122     61    -0.020     0.199    -0.036    -0.020     0.058     0.071    -0.042     0.143    -0.076    -0.041     0.354    -0.036    -0.020
V124     62    -0.020    -0.103    -0.036    -0.020     0.058     0.071    -0.042     0.143    -0.076     0.251    -0.058    -0.036     1.000
V128     63    -0.020     0.199    -0.036    -0.020     0.058     0.071    -0.042    -0.143     0.269    -0.041    -0.058    -0.036    -0.020
V131     64    -0.029    -0.147    -0.052    -0.029     0.083     0.102     0.316    -0.204    -0.108    -0.058    -0.082    -0.052    -0.029
V132     65    -0.020     0.199    -0.036    -0.020     0.058     0.071    -0.042    -0.143     0.269    -0.041     0.354     0.565    -0.020
V133     66    -0.020     0.199    -0.036    -0.020     0.058     0.071    -0.042    -0.143     0.269    -0.041     0.354     0.565    -0.020
V134     67    -0.089     0.305     0.030    -0.089     0.255    -0.022     0.144     0.089     0.206     0.004     0.134     0.218    -0.089
V138     68    -0.034     0.080     0.190    -0.034     0.097     0.119    -0.070    -0.000    -0.126    -0.068     0.246    -0.060    -0.034
V139     69    -0.036    -0.004    -0.064    -0.036    -0.069    -0.084    -0.075     0.253    -0.134    -0.072     0.141    -0.064    -0.036
V140     70    -0.058     0.197    -0.102    -0.058     0.165     0.058     0.093    -0.058    -0.075    -0.115     0.003    -0.102    -0.058
V141     71    -0.036     0.174     0.291    -0.036     0.103     0.126    -0.075     0.253     0.069    -0.072     0.141    -0.064    -0.036
V144     72     0.274     0.058    -0.079    -0.045     0.128    -0.067     0.237     0.045     0.050    -0.089     0.260     0.297    -0.045
V147     73    -0.048     0.183    -0.084     0.429    -0.000    -0.000    -0.098    -0.067     0.145    -0.095     0.250     0.197    -0.048
V148     74    -0.042     0.100    -0.075     0.484    -0.030    -0.037     0.185    -0.147     0.377    -0.084    -0.119    -0.075    -0.042
V149     75     0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0
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C-III

		V77 40	V78 41	V79 42	V80 43	V81 44	V82 45	V83 46	V84 47	V85 48	V87 49	V89 50	V91 51	V94 52
V77	40	1.000												
V78	41	-0.029	1.000											
V79	42	-0.020	-0.029	1.000										
V80	43	0.101	0.144	-0.152	1.000									
V81	44	-0.020	-0.029	-0.020	0.101	1.000								
V82	45	-0.036	-0.052	-0.036	0.179	-0.036	1.000							
V83	46	-0.020	-0.029	-0.020	-0.152	-0.020	-0.036	1.000						
V84	47	-0.020	-0.029	-0.020	-0.152	-0.020	-0.036	-0.020	1.000					
V85	48	-0.020	-0.029	-0.020	0.101	-0.020	-0.036	-0.020	-0.020	1.000				
V87	49	-0.020	-0.029	-0.020	0.101	-0.020	-0.036	-0.020	-0.020	-0.020	1.000			
V89	50	-0.020	-0.029	-0.020	-0.152	-0.020	-0.036	-0.020	-0.020	-0.020	-0.020	1.000		
V91	51	-0.020	-0.029	-0.020	0.101	1.000	-0.036	-0.020	-0.020	-0.020	-0.020	-0.020	1.000	
V94	52	-0.020	-0.029	-0.020	0.101	1.000	-0.036	-0.020	-0.020	-0.020	-0.020	-0.020	1.000	1.000
V103	53	0.305	-0.096	-0.067	-0.037	-0.067	0.101	-0.067	-0.067	-0.067	0.305	0.305	-0.067	-0.067
V109	54	-0.029	-0.042	-0.029	-0.217	-0.029	-0.052	0.700	-0.029	-0.029	-0.029	-0.029	-0.029	-0.029
V113	55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
V116	56	-0.029	-0.042	0.700	-0.036	-0.029	-0.052	-0.029	-0.029	-0.029	-0.029	-0.029	-0.029	-0.029
V117	57	-0.042	-0.060	0.484	0.078	-0.042	-0.075	-0.042	-0.042	-0.042	0.484	-0.042	-0.042	-0.042
V118	58	-0.042	-0.060	-0.042	0.209	0.484	-0.075	-0.042	-0.042	-0.042	-0.042	-0.042	0.484	0.484
V119	59	-0.035	-0.050	0.312	-0.086	-0.035	-0.061	-0.035	-0.035	-0.035	-0.035	-0.035	-0.035	-0.035
V121	60	-0.029	-0.042	-0.029	0.144	-0.029	-0.052	-0.029	-0.029	-0.029	-0.029	-0.029	-0.029	-0.029
V122	61	-0.020	-0.029	-0.020	-0.152	-0.020	-0.036	-0.020	-0.020	-0.020	-0.020	-0.020	-0.020	-0.020
V124	62	-0.020	-0.029	-0.020	0.101	-0.020	-0.036	-0.020	-0.020	-0.020	-0.020	-0.020	-0.020	-0.020
V128	63	-0.020	-0.029	-0.020	0.354	-0.020	-0.036	-0.020	-0.020	-0.020	-0.020	-0.020	-0.020	-0.020
V131	64	-0.029	0.479	-0.029	0.144	-0.029	0.378	-0.029	-0.029	-0.029	-0.029	-0.029	-0.029	-0.029
V132	65	1.000	-0.029	-0.020	0.101	-0.020	-0.036	-0.020	-0.020	-0.020	-0.020	-0.020	-0.020	-0.020
V133	66	1.000	-0.029	-0.020	0.101	-0.020	-0.036	-0.020	-0.020	-0.020	-0.020	-0.020	-0.020	-0.020
V136	67	0.229	0.327	-0.089	0.362	-0.089	0.030	-0.089	-0.089	-0.089	0.229	-0.089	-0.089	-0.089
V138	68	-0.034	-0.048	-0.034	-0.147	-0.034	-0.060	-0.034	-0.034	-0.034	-0.034	-0.034	-0.034	-0.034
V139	69	-0.036	-0.052	-0.036	-0.119	-0.036	-0.064	-0.036	-0.036	-0.036	-0.036	-0.036	-0.036	-0.036
V140	70	-0.058	0.212	-0.058	0.387	-0.058	-0.102	-0.058	-0.058	-0.058	-0.058	-0.058	-0.058	-0.058
V141	71	-0.036	-0.052	-0.036	-0.119	-0.036	-0.064	-0.036	-0.036	-0.036	-0.036	-0.036	-0.036	-0.036
V144	72	0.594	-0.064	-0.045	-0.016	-0.045	-0.079	-0.045	0.274	-0.045	-0.045	-0.045	-0.045	-0.045
V147	73	0.429	-0.068	-0.048	-0.118	-0.048	-0.084	0.429	-0.048	-0.048	-0.048	-0.048	-0.048	-0.048
V148	74	-0.042	-0.060	0.484	0.078	-0.042	-0.075	0.484	-0.042	-0.042	-0.042	-0.042	-0.042	-0.042
V149	75	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

```
              V103       V109       V113       V116       V117       V118       V119       V121       V122       V124       V128       V131       V132
                    53         54         55         56         57         58         59         60         61         62         63         64         65

 V103      53    1.000
 V109      54   -0.096      1.000
 V113      55    0.0        0.0        0.0
 V116      56   -0.096     -0.042      0.0        1.000
 V117      57    0.054     -0.060      0.0        0.316      1.000
 V118      58    0.246     -0.060      0.0       -0.060     -0.087      1.000
 V119      59   -0.114     -0.050      0.0        0.198      0.107     -0.072      1.000
 V121      60   -0.096     -0.042      0.0       -0.042     -0.060     -0.060     -0.050      1.000
 V122      61   -0.067     -0.029      0.0       -0.029     -0.042     -0.042     -0.035     -0.029      1.000
 V124      62   -0.067     -0.029      0.0       -0.029     -0.042     -0.042     -0.035     -0.029     -0.020      1.000
 V128      63    0.305     -0.029      0.0       -0.029     -0.042      0.484     -0.035     -0.029     -0.020     -0.020      1.000
 V131      64   -0.096     -0.042      0.0       -0.042     -0.060     -0.060     -0.050     -0.042     -0.029     -0.029     -0.029      1.000
 V132      65    0.305     -0.029      0.0       -0.029     -0.042     -0.042     -0.035     -0.029     -0.020     -0.020     -0.020     -0.029      1.000
 V133      66    0.305     -0.029      0.0       -0.029     -0.042     -0.042     -0.035     -0.029     -0.020     -0.020     -0.020     -0.029      1.000
 V136      67    0.172     -0.127      0.0       -0.127      0.144      0.309      0.065     -0.127     -0.089     -0.089      0.229      0.100      0.229
 V138      68   -0.111     -0.048      0.0        0.254     -0.070     -0.070     -0.058     -0.048      0.814     -0.034     -0.034     -0.048     -0.034
 V139      69   -0.118     -0.052      0.0       -0.052      0.236     -0.075     -0.061     -0.052      0.565     -0.036     -0.036     -0.052     -0.036
 V140      70   -0.039     -0.082      0.0       -0.082     -0.119      0.093     -0.098     -0.082     -0.058     -0.058      0.354      0.212     -0.058
 V141      71    0.101     -0.052      0.0       -0.052     -0.075      0.236     -0.061     -0.052      0.565     -0.036     -0.036     -0.052     -0.036
 V144      72    0.086     -0.064      0.0       -0.064      0.237     -0.092     -0.076     -0.064      0.274     -0.045     -0.045     -0.064      0.594
 V147      73    0.017      0.272      0.0       -0.068     -0.098     -0.098     -0.081      0.272      0.429     -0.048     -0.048     -0.068      0.429
 V148      74    0.054      0.316      0.0        0.316      0.185      0.185      0.107     -0.060     -0.042     -0.042      0.484     -0.060     -0.042
 V149      75    0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0


              V133       V136       V138       V139       V140       V141       V144       V147       V148       V149
                    66         67         68         69         70         71         72         73         74         75

 V133      66    1.000
 V136      67    0.229      1.000
 V138      68   -0.034     -0.148      1.000
 V139      69   -0.036     -0.158      0.440      1.000
 V140      70   -0.058      0.262     -0.096     -0.102      1.000
 V141      71   -0.036      0.030      0.440      0.291     -0.102      1.000
 V144      72    0.594      0.203      0.191      0.109     -0.126      0.109      1.000
 V147      73    0.429     -0.059      0.316      0.197     -0.134      0.197      0.343      1.000
 V148      74   -0.042     -0.020     -0.070     -0.075      0.093     -0.075     -0.092      0.147      1.000
 V149      75    0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0
_CORRELATION MATRIX IS SINGULAR.  RANK =   49.  A GENERALIZED INVERSE IS COMPUTED.
```

APPENDIX D

SCORING PROCEDURES FOR THE CORRECT INFORMATION INVENTORY

Items are scored as shown on the test protocol except:

Multiple fact items: WISC Seasons Any season = 1 Four seasons = 2
WAIS Vessels Any blood vessel = 1 Three vessels = 2
Presidents Any recent president = 1 Four presidents = 2

Verbal alternatives: On verbal items, score the meaning given if there is more than one correct meaning.
Score all meaning categories 0 if the item was tried and failed. Do not draw inferences from errors.

Performance Items: Score correct performance items in all related categories; there is no way to tell which clues students are using.

Block Designs: Use scaled score. Below 10 = 1
Score of 10 = 2
Above 10 = 3

Coding: Below 50 symbols = 1 50 symbols = 2 Above 50 = 3

Digits: Forward Below 6 = 1 6 = 2 Above 6 = 3
Reversed Below 4 = 1 4 = 2 Above 4 = 3

Puzzles
Cartoons): Partial or inferior solution = 1
Item completed correctly = 2
Item done in bonus time = 3

All items failed are scored 0.
Items not attempted (or not given) are left blank.
Where the tester did not show a failure (item blank), but directions in the manual instruct the tester give the item, score 0.
Where initial items were by-passed, score as correct.

Visual and oral items are grouped separately; compute separate scores for each group and the total for each category.

Count total failures and total not given for the entire protocol (not by category).

If you come across an answer you abolutely know is scored wrong, you may correct it in pencil on the test protocol and score it as it should be on the inventory.

Specific Guide to WISC:

1. Sword is scored under "action" only when defined in action form (fight with, duel) A reference to a weapon or knife is scored under "patriotic/history".
2. Diamond is scored under "property" if a gem, jewel or precious stone. It is under "clothes" if jewelry, and under"science" if a hardest stone or substance.
3. Spade is scored under "money" if gambling is directly mentioned; if not "sports" only e.g., play cards = sports play poker = sports and money.
4. Nuisance is scored"feeling" if an effect on someone is mentioned "bugs you", but it is an attribute if defined as "a pest."

Specific Guide to WAIS:

1. Presidents partly wrong (e.g., JFK and RFK) is scored for correct part; ignore error.
2. Consume is scored "food" if defined as taking in. It is "science" if defined as burn
3. Bad company is scored an "attribute" if it reflects on your reputation and makes you bad. It is"moral"if it gets you in trouble and makes you do bad things.

"Correctness Inventory" Code

Col.	Variable	
01 02 03	Cell Number	
04 05	Case Number	
06 07	People:Feelngs	(1)
08 09	Religion	(2)
10 11	Patriot/Hist	(3)
12 13	Lit/Music	(4)
14 15	Geography	(5)
16 17	Animals	(6)
18 19	People:Attrib.	(7)
20 21	Health	(8)
22 23	Food	(9)
24 25	Home/Family	(10)
26 27	Clothes	(11)
28 29	People:Actions	(12)
30 31	Morals	(13)
32 33	Sport	(14)
34 35	Emergencies	(15)
36 37	Work	(16)
38 39	Property/Money	(17)
40 41	Science/Tech.	(18)
42 43	Vehicles	(19)
44 45	Outdoors	(20)
46 47	Tools/Measures	(21)
48 49	Calendar/Clock	(22)
50 51	Size/Shape	(23)
52 53	Number	(24)
56 56	Zero scores	
57 58 59	Not attempted	
60 61	Birth year	
62 63 64 65	Age at test	

"CLEAR" MATRIX CELLS WITH 3 OR MORE CASES

76.	Middle N. European boy with Technology (sex-type I) father	49
16.	Oldest N. European boy with Technology (sex-type I) father	36
136.	Youngest N. European boy with Technology (sex-type I) father	30
77.	Middle N. European boy with Technology (sex-type II) father	27
196.	Oldest N. European girl with Technology (sex-type I) father	21
256.	Middle N. European girl with Technology (sex-type I) father	18
89.	Middle Hispanic boy with Outdoor father	17
87.	Middle Hispanic boy with Technology (sex-type II) father	16
17.	Oldest N. European boy with Technology (sex-type II) father	15
82.	Middle Hispanic boy with Personal Service father	15
316.	Youngest N. European girl with Technology (sex-type I) father	15
86.	Middle Hispanic boy with Technology (sex-type I) father	14
12.	Oldest N. European boy with Personal Service father	13
137.	Youngest N. European boy with Technology (sex-type II) father	12
78.	Middle N. European boy with Business/Government father	11
258.	Middle N. European girl with Business/Government father	11
266.	Middle Hispanic girl with Technology (sex-type I) father	11
116.	Middle Black boy with Technology (sex-type I) father	10
132.	Youngest N. European boy with Personal Service father	10
192.	Oldest N. European girl with Personal Service father	10
18.	Oldest N. European boy with Business/Government father	9
138.	Youngest N. European boy with Business/Government father	9
198.	Oldest N. European girl with Business/Government father	9
257.	Middle N. European girl with Technology (sex-type II) father	9
262.	Middle Hispanic girl with Personal Service father	9
267.	Middle Hispanic girl with Technology (sex-type II) father	9
26.	Oldest Hispanic boy with Technology (sex-type I) father	7
27.	Oldest Hispanic boy with Technology (sex-type II) father	7
133.	Youngest N. European boy with Business Contact father	7
13.	Oldest N. European boy with Business Contact father	6
14.	Oldest N. European boy with General Culture father	6
79.	Middle N. European boy with Outdoor father	6
112.	Middle Black boy with Personal Service father	6
176.	Youngest Black boy with Technology (sex-type I) father	6
269.	Middle Hispanic girl with Outdoor father	6
292.	Middle Black girl with Personal Service father	6
22.	Oldest Hispanic boy with Personal Service father	5
147.	Youngest Hispanic boy with Technology (sex-type II) father	5
194.	Oldest N. European girl with General Culture father	5
197.	Oldest N. European girl with Technology (sex-type II) father	5
253.	Middle N. European girl with Business Contact father	5
296.	Middle Black girl with Technology (sex-type I) father	5
312.	Youngest N. European girl with Personal Service father	5
317.	Youngest N. European girl with Technology (sex-type II) father	5
11.	Oldest N. European boy with Art/Entertainer father	4
29.	Oldest Hispanic boy with Outdoor father	4
52.	Oldest Black boy with Personal Service father	4
74.	Middle N. European boy with General Culture father	4
88.	Middle Hispanic boy with Business/Government father	4
134.	Youngest N. European boy with General Culture father	4
146.	Youngest Hispanic boy with Technology (sex-type I) father	4
149.	Youngest Hispanic boy with Outdoor father	4
206.	Oldest Hispanic girl with Technology (sex-type I) father	4
252.	Middle N. European girl with Personal Service father	4
12.	Oldest N. European boy with Science father	3
28.	Oldest Hispanic boy with Business/Government father	3
42.	Oldest S. European boy with Personal Service father	3
73.	Middle N. European boy with Business Contact father	3

117.	Middle Black boy with Technology (sex-type II) father	3
167.	Youngest S. European boy with Technology (sex-type II) father	3
168.	Youngest S. European boy with Business/Government father	3
193.	Oldest N. European girl with Business Contact father	3
199.	Oldest N. European girl with Outdoor father	3
202.	Oldest Hispanic girl with Personal Service father	3
223.	Oldest S. European girl with Business Contact father	3

FATHER OCCUPATION CHANGING MATRIX CELLS WITH 3 OR MORE CASES

405.	Middle N. European boy with father's occupation changing	74
406.	Middle Hispanic boy with father's occupation changing	53
411.	Youngest N. European boy with father's occupation changing	45
399.	Oldest N. European boy with father's occupation changing	34
409.	Middle Black boy with father's occupation changing	33
423.	Middle N. European girl with father's occupation changing	32
424.	Middle Hispanic girl with father's occupation changing	23
417.	Oldest N. European girl with father's occupation changing	19
400.	Oldest Hispanic boy with father's occupation changing	15
427.	Middle Black girl with father's occupation changing	15
412.	Youngest Hispanic boy with father's occupation changing	11
429.	Youngest N. European girl with father's occupation changing	11
418.	Oldest Hispanic girl with father's occupation changing	10
430.	Youngest Hispanic girl with father's occupation changing	7
415.	Youngest Black boy with father's occupation changing	6
402.	Oldest S. European boy with father's occupation changing	5
408.	Middle S. European boy with father's occupation changing	5
414.	Youngest S. European boy with father's occupation changing	5
403.	Oldest Black boy with father's occupation changing	4
421.	Oldest Black girl with father's occupation changing	4

BIRACIAL MATRIX CELLS WITH 3 OR MORE CASES

435.	Oldest bi-racial boy with Personal Service father	4
449.	Middle bi-racial boy with Technology (sex-type I) father	4
435.	Oldest bi-racial boy with Personal Service father	3
470.	Oldest bi-racial girl with Technology (sex-type II) father	3

APPENDIX E
CASE STUDY FRAME WORK

Modeling and Reinforcement Contingencies Summarized

Social Role Relationships

Father is ambitious; a talker and dreamer.
Mother is the organizer and moral support.

Mother

Mexican-American.
HS and Bus college.
Bookkeeper--a high structure V-M+ occupation.

4 children.

Divorced.

Father

Mexican-American.
Mobile aspirations.
V+M- tendency.
Finished HS, one year college.

OEO counselor.
On political committees. Much personal interaction with Anglos--PR, confrontation, etc. A people-oriented V+M- occupation.

Father trying to improve sexual identity. Achieved more dominant role through superior education and control over family income, rather than exercise of sex-typed social skills.

Step-Mother

Mexican immigrant.
Rural background.
Less than 8th-grade education. Speaks more Spanish than English. Housewife--style is V-M+ at low abstract level.

Father sets middle-class aspirations for boy, but forces him to interact continually with low SES step-mother, doing menial chores.

Tells step-mother to manage the home and discipline the children.

Tells oldest son, now 16, he wants him to go to college and be a lawyer.

Son

Boy has middle-class aspirations based on Anglo models and is the scion of his family, but has lower-class interests.

Is under masculinizing peer pressures to control verbalism, handle cars, etc., but has poor manual skills.

Is under parental pressure to be verbally militant about race.

Is forced to interact with lower-class, bilingual step-mother, who regulates social life and supervises him at menial chores.

Result

Boy is failing in school, fighting with Anglos, cutting, smoking, disruptive in class. As exhortations and achievement pressures intensified, infractions became more serious. Finally, when parents were called about another mis-step, he collapsed in the APA's office. He had an hour-long anxiety attack with hysterical crying, which resulted in referral to psych services.

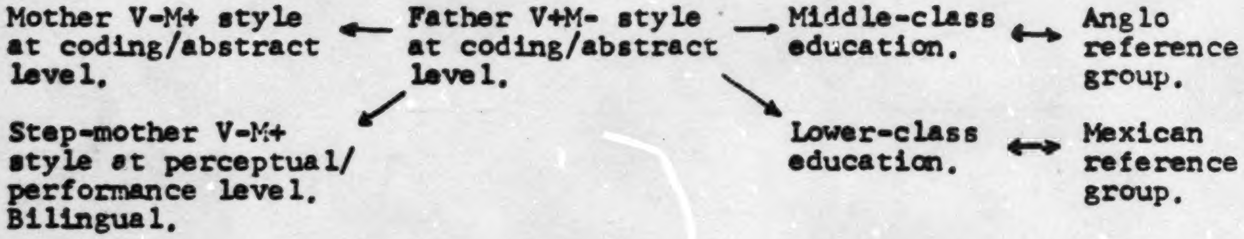
Boy's View of Conflicts

Sex-typing problem:
Step-mother "is on my back all the time", tries to control all activities. Father approves, "sits back and acts almost like a referee" as bickering goes on and on. Bickers with women teachers when pressed, dependent on men teachers but angry and frustrated when attention not given. Doing poorly in school. People-oriented V+M- style poorly controlled--can't do math, explosive in verbal classes, socially interactive in shop. Smoking, fighting.

Vocational-typing problem:
First said he wants to be a lawyer; then said school record is poor, said he wants to be a mechanic. Ran away from home once. Poor manual skills, poor work habits.

Ethnic problem:
Militant about race; fights with Anglos, touchy in verbal classes.

Outline of Conflicting Role-Relationships


Mother V-M+ style at coding/abstract level.
Father V+M- style at coding/abstract level.
Middle-class education.
Anglo reference group.
Step-mother V-M+ style at perceptual/ performance level. Bilingual.
Lower-class education.
Mexican reference group.

Impression: Hypotheses to check with family

Boy is immobilized by conflicting pressures in the areas of sex-typing, vocational-typing, and race, from people who are important to him. He is expected to achieve but does not have the skills he needs. Attempts to comply with exhortations get him into trouble on every hand, because an over-motivated but immature performance results.

The father is recreating the configurations of his own home as he tries to be a good man. He is probably an oldest son who had much support from an ambitious, hard-working, poorly educated mother. He is very competitive, and he is probably placing the boy in the role occupied in his own family by an ineffectual father with whom his mother bickered while he sat back and watched; perhaps he even took the role of father-surrogate to help her out at times. He achieved a prestigious middle-class position through energy and verbal skill. He has a great need to dominate, which he does by verbal pushing, but he is incapable of helping in any direct way because other skills are under-developed. Until he met stronger men in OEO, he had only Anglo models and the rejected image of his father to draw on. He has now merged a new and somewhat naive image of "the boss" with the father role. When the boy has tried to emulate this image, it has gotten him into trouble at home and at school.

Prescription:

1. Counselor to help boy sort out role-relationships in terms of sex-typing patterns, vocational aspirations, ethnic status, and social class standards. (Who teaches him what?)

2. Counselor to help boy define his own values and priorities (i.e., what kind of man does he want to be?) on the basis of observations and reporting about people he admires.

3. Counselor to go over 1. and 2. with father (a) to help him see implications and incongruities, (b) to assess the extent to which interaction of parents with boy reinforces problems, and (c) to formulate a plan for discipline.

4. Compensatory program for manual skills, task orientation, and work habits.

5. Tutorial help in math-science plus more intense role-relationships with these specialists, as an assistant.

APPENDIX E
Sample Case Study Case #3

Test Interview Notes Confidential

[redacted] BD 7/30/60 '79 Age 15-8 Test date 4/28/76

[redacted] was referred in April after attempts to help him in the Opportunity Program at could not reverse a drift toward failure. He was a year older than classmates when he entered high school. He was put in Opportunity Class at the end of October because of inability to function in regular academic work, though he had made C's in such classes in junior high. He had problems in attendance, behavior, and work habits. Attendance improved to 85%, as did ability to deal with authority; conduct in class also improved. He was fairly attentive but was generally very passive and seemed to be depressed at times. He showed a slight V-M+ style on basic skills. These were at 4th to 5th grade level on tests. Even in the Opportunity class grades were D-F and he only sought help sporadically. He was also in PE and Crafts classes.

No information on the boy's feelings about best and worst classes were obtained, but he indicated that school is "a drag...going to school makes me mad." He was thinking of cutting, said he would do so again someday and if smarter "I would cut a lot." Attempts to test him had been delayed because he had been suspended for failure to attend Saturday detention class.

[redacted]'s problem seems related to a sense of being overwhelmed by a stronger male figure, probably the father, whom he admires and would like to emulate, but whose dominance he also resents and perhaps fears to some degree. The father seems to be a distant figure, while the mother is held responsible. The boy's confidence seemed to be undermined and he undermines himself in the same way at times. By and large, he is a small, slight, boy who would like to be more in control of things than he is and seems to see trucks and cars as symbols of the power he would like to have, but his present role is a passive one where he is taking in much visual information which he comprehends well, while he stands back passively and watches the action.

[redacted] says he has no plans. He does not know what parents want him to do but feels anything would be OK. He does not want to go to college, doubts if he will finish high school, in fact he thinks he might get kicked out.

He seems to see his father as large and important, says he works at FMC "in an office" and is pretty sure he has a high school diploma. On the other hand, his mother "does not work," and has only a 9th grade education. [redacted] sees the average man as 6'11". He made no personal comments about his father, or even about boy's in general; but when tested he wore a "tough guy 'frown" most of the time. He said that brave is "to have a lot of guts," and he gave a number of tough-sounding responses in relation to a "big/small" concept of males, i.e. if hit he would "smash their face"; even if the boy were smaller he would "smash his face in." He also gave some "you" responses, both of which were hostile and seemed directed toward an omnipotent larger figure with whom he has an inner dialogue, i.e. "I hate you...if bigger I would fuck you up." Meanwhile, he sees females as quite small (5'4"), he sees mother as somewhat sympathetic, (she "doesn't like to hit me"), but also in charge of his activities under what appears to be an authoritarian system in the home. For example, on an item about going to the store he said if the grocer had no bread he would "bring the money back" but made no mention of going to another store. Despite these hints of a physically punitive environment under a dominant, authoritarian father, and family relations which accord low status to females and condone aggression toward weaker males to some degree, [redacted] also emphasizes a feeling of being "nice." He says mother and father are nice to him, that his one younger brother is nice, that girls are nice (has no sister) and that he, himself, tries to be nice. He said that if he lost something belonging to another child, he would replace it.

Test Subject: [redacted]

Grade	Test	IQ/Aptitude [illegible]	[illegible]	[illegible]	Total	Test	Achievement Tests Read Voc	Read Comp	Read [illegible]	Total Reading	Lang Exp	Mech Eng	Spell	Read Sci	Total Language	Arit Rea	Arit App	Arit Comp	Total Arith
8						WRAT	8.9						3.7						4.9
9	WISC (15-8)	67	76		69	"				4.2									5.0

Strengths: Awareness of visual detail in the physical environment (50 %ile)
Comprehension of human gestures and action sequences (50 %ile)

Weak Areas: Manipulation of spatial designs (off scale)
Verbalizing moral and practical principles (1st %ile)
Copying and transposing meaningless marks according to a number code (2 %ile)
Storage of isolated facts (2 %ile)

WISC Profile: Abstract
Voc ___ _5_ ___
Info ___ _4_ ___
Comp ___ _3_ ___
Arith ___ _5_ ___
Simil ___ _6_ ___
DigSp ___ _6_ ___
(9)

Performance
PicCom ___ _10_ ___
PicArr ___ _10_ ___
BlkDes ___ _2_ ___
ObjAssem ___ _7_ ___
Coding ___ _4_ ___
(9)

[illegible] Profile:
Vocab ___
Proverbs ___
Exposit ___
Similar ___
Discrimi ___
Relation ___
Analyses ___
Assoc/Oper Shift ___
Operational ___
Flexibility ___
Visualization ___
ComplexTolerance ___
Orientation ___
[illegible] Work ___

He feels that a hero is "somebody that helps." However, he gave a below average number of common teen concerns on sentences. The largest number of these referred to family, he said he thinks most about and worries most about his family. He wrote (and then crossed out) when people come to visit -- "I behave." He defined nonsense as something you do that's wrong, and nuisance as "somebody that bugs."

In line with the foregoing ambivalent family relations, [redacted] showed a kind of reluctant compliance on his test, with a young male tester. He was apt to make surly comments and "sort of looks and acts uncooperative, but in fact does everything I say." He made surly comments to easy items, e.g. Who discovered America? -- "Don't know and don't care." He was prone to take slightly opposite views on practical questions, giving other than the "expected response," or he became exasperatingly simplistic, e.g. a nail is a nail that you nail into wood." His problem with authority figures in school has been noted. He stays within bounds with a young male Opportunity class teacher, but is clearly preoccupied with power relations of this kind.

[redacted] would like to be a truck driver, dreams of trucks, likes to look at cars, would like to be able to drive (at 15-8) and likes driving best. He also says he gets fun out of drinking beer; when older would like to go to the bar. He wrote "I love my pot" and said he enjoys smoking it. He also recognizes that "beer and wine get you drunk", says he wants to go to the party, and that when he wakes at night he goes and eats. He made no other mention of recreation but did make his best grades in junior high in PE (B). No report of functioning in PE in high school was provided, but attitude toward peers in the Opportunity class is only fair. It seems likely that [redacted] is more of a spectator than a participant. He may also have fears about physical contact, in part, due to authoritarian relations with males at home, and in part because of his small size. When tested, [redacted] was able to do all but one of the items dealing with human gestures and actions, showing good comprehension in this area, though his performance was slow. He seems to be focusing on actions more than styles, however, for he was prone to miss items relating to faces and clothes on picture completions. He also seems very uncertain on items relating to males and authority figures. He left blank questions about what his friends think- boys- other boys and girls- my father- and teacher-. He also left blank items relating to being jealous, unhappy, and getting hurt.

[redacted] said he would like to be smart and recognizes that examinations are given to "make sure you're capable of doing it." But he also relates being smart to escaping from school. He reflects a desire for high status, e.g. he says we have senators "to give people a chance to get up there", and says he is proud of himself. But then also says "I feel like an ass...when I play games I feel stupid." He said others think he is crazy, gave what appeared to be a nonsense response to a literary question, was very apt to say "don't know" too quickly, was 10 minutes late after lunch and said he could not remember the room.

Though some of [redacted]'s responses were quite imaginative, others seemed almost deliberately childish, and he displayed a rather helpless approach to problem-solving throughout the test situation, sometimes over-emphasizing simplistic logic, as noted. He took a passive approach to questions about disaster, indicating little sense of responsibility for action. Responses almost sounded as though he saw such situations as spectacles to watch. He said that to make water boil you "stick inside the pot...that paper and coal are alike because "you burn paper when you light coal", (giving relations instead of classifications). He defined nitroglyceren as "a formula", changing to "a bomb" when asked for more information. He felt brick houses were better because " wood would burn up." He defined umbrella as "something you stand under to get out of the rain." When asked why women and children are saved first in a shipwreck he said "I wouldn't" but when pressed, he said "a kid can grow if you save them." If he saw a train on a broken track he said he would "watch it go over it...ain't nothing you can do if it's going fast." In his imaginative way he seemed to see physical items as animate symbols, e.g. oil floats "because maybe it doesn't want to go under..."

[redacted]'s preoccupation with power struggles, tough guy roles, explosions and burning, and escape from authoritarian situations, reflect a background where he is shamed Male privilege is modeled as an ideal but is not within his grasp. As he tests his own strength and the limits set by others, [redacted] is successful here and there, so that strong motivation is sustained by intermittant reinforcement, but he is frustrated so often that he has done a lot of thinking about alternatives, very little of which is positive or constructive. He seems to have few outlets in athletics, peer relations, or hobbies to turn to when he loses out in power struggles. He wrote "I wish to die"...thinks of killing himself but is "afraid to." He often feels sorry for himself, says "almost anything" makes him sad. If he does not get what he wants at home "I just don't get it." He recognizes that a promise is a contract; feels it is not right to say something and "then not do it;" and says he is sorry for some things, not specified. He said he is scared to shoot someone. He is prone to identify with the underdog, i.e. when asked why criminals are locked up he said that "most of them are trying to make a living", but then when pressed further, he responded in his compliant way that they are "doing something bad." Similarly, on an item about beggars and charity, he first said that he did not know why charities were better, then gave a conforming answer when pressed ("help people that need it"), changing again to say that charities weren't better because "the beggar needs it too."

On his test [redacted] showed a V-P+ style, as might be expected if his father does technical work in mechanical and electronics fields. [redacted] can read phonetically, but may understand little. He could read 30 out of 40 words, but could only define 10 of the words completely. His concepts were simplistic and meager. He was poor at labeling objects in pictures, and despite his good recognition vocabulary, his reading level is about 4th grade according to teacher, and the boy says "reading is a drag." On classification items, he tended to use superficial concepts, or to state relationships rather than classes. He dealt even less well with Math operations, could not divide in his head, and showed a short memory for numbers and poor ability to manipulate them in his head. Also he could do only simple spatial designs, was slow and prone to give up.

His phonetic skills show that he has tried to read in the past and did learn " word attack " skills; but there is little opportunity to explore word meanings with his mother, whose education is quite poor, or with his father, whose work does not seem to involve much human communication, despite his office job. As a result, [redacted] has had little practice at speech, writing, or communication of abstract ideas. He is poor at stating verbal principles, remembering facts, makes grammar and spelling errors, though syntax is adequate, and also did poorly at mathematical concepts dealing with numbers and even copying marks according to a number code. Altogether, he can function at intermediate levels, academically, by doing as told, but the material has very little meaning for him primarily because it appears to have little meaning to those with whom he tries to communicate. What does have meaning for [redacted] is visual information. He was at the 50th %ile in recognizing visual details in the physical environment, and as noted previously, in comprehending gestures and action sequences. He is therefore a passive watcher, who is prone to take a detached view even of himself in action situations, so that he feels stupid, alienated, and unable to participate. On the other hand, the models for participation that he has incorporated, by some means, is authoritarian, impersonal and possibly anti-intellectual, and prone to physical coercion of those "beneath you" if they do not do as they are told. He appears to have been shamed, and reacts with inflammatory thoughts, but he does not seem to be under the type of heavy achievement pressure that could cause him to translate such thoughts into action. He appears to be trying to escape from achievement situations, perhaps because he is learning no productive alternatives to the foregoing anti-social impulses. As his motivations intensify during the adolescent years, more serious problems may ensue if more satisfying patterns are not learned.

RECOMMENDATIONS:

[redacted]'s relations with the other members of his small, tight family should be checked out. It seems unlikely that parents can do more for him than they are doing already. [redacted]'s generally anti-social attitudes suggest frustration and limited social skills on the part of the parents, which they, too, have found frustrating. Any suggestion that they should play different roles will be anxiety-arousing and is apt to intensify [redacted]'s ineffective, ambivalent behavior.

An alternative environment should be set up for [redacted] in school. It seems clear that parents would welcome changes which they cannot produce themselves. Also, if they are as passive as [redacted], whatever reinforcements are provided would have to come from school rather than home. Counselor should review with [redacted] the kind of masculine model he values, drawing on [redacted]'s good observational skills for material. [redacted] should be encouraged to talk about peers he is so often watching. The goal would be two-fold, one to improve verbal fluency and enlarge associative fields for the many words [redacted] already recognizes, and secondly to help him internalize a view of the person he wants to be and a set of standards for judging and rewarding himself. Attitudes toward classes should be reviewed to find out settings in which he functions best. These strong points should be pointed out and related to his developing self-concept.

[redacted]'s aspirations appear to be far removed from what he actually can do, as a result of vicarious intake in settings where he does not perform, himself. Short-term goals will have to be arranged, and a system of monitoring progress so that he recognizes his own gains. General exhortations and threats of the consequences of failure should be avoided. Attention should be on the immediate present, with positive feedback of a realistic (and not patronizing) kind for whatever successes he achieves. He is so compliant that "success" at doing what he is told may be mistakenly reinforced, and may intensify [redacted]'s inflammatory inner dialogue, even while he appears passive and unconcerned. Care should be taken to insure that what is reinforced is in line with [redacted]'s own goals, and not those of dominant authority figures. [redacted] should receive matter-of-fact credit for doing as told, but special reinforcements should be reserved for progress toward more subtle, personal goals.

Present program seems appropriate. [redacted] will need help in verbal classes. Here, too, fluency training rather than new concepts should be emphasized. He should be able to function in low-level Math classes, and Auto Shop may be more in line with his own goals than Crafts.

[redacted] BD: 7/30/60 '79 YB Date tested: 4/28/76 Age when tested: 15-8 Confidential

GOALS: "no plans;" would like to be a truck driver
won't go to college; doubt will finish HS (?) will get kicked out
cars and trucks
enjoys smoking pot and drinking beer
E-4

OCC3

- to see-the car; like best-to drve a car;
would like-to be able to drive a car
like to be-a truck driver; dream of-trucks
if could only-smoke; when alone-I smoke
love-my pot
when older-going to the bar; get fun out of-drinking beer
am proud of-myself
try to-be nice
like to be-smart
want to go to-the party

now I wish-to die; s/to think-would kill myself; am afraid of-killing myself
makes me sad-almost s/t
feel like-a ass; when play games-fell stupid
am sorry-for some things

stove-sugar: groc. store
water-boil: stuck it inside pot, turn on stove
sun-set: sky (?) DK
stomach: holds food
oil-float: maybe doesn't want to go under (?) DK
Romeo-Juliet: a "dork" (?) DK
fourth-July: Independence
plum-peach: pits inside
cat-mouse: whiskers

hero: s/body that helps
brave: to have a lot of guts

if bigger-would fuck you up
if smarter-would eat alot

lose-balls: get him another one
loaf-bread: bring the $ back
train-track: watch it go over it; ain't n/t can do if going fa
house-brick: wood would burn up
criminals: most of 'em trying to make a living (?) cause doing s/t bad
bills-check: get ripped off
charity-beggar: DK (?) to help people that need it, but beggar needs it, too
gov't-exams: make sure capable of doing it
cotton-fiber: cause it's smooth
senators: give people chance to get up there
promise-kept: is not right to say s/t (?) then do it
beer-wine: get you drunk
paper-coal: burn paper when light coal
umbrella: s/t that you stand under to get out of rain
mail: [illegible]
fur: hair
join: go together
sword: a knife
fable: story
microscope: like a magnifying glass
nitro: formula (?) a bomb
nuisance: s/body that bugs
nonsense: you do s/t wrong

PEOPLE:
other people think I'm-crazy
am scared to-shoot s/one

Aver. Amer. Man-6'11"

Aver. Amer. Woman- 5'4"; girls-are nic
women-children: I wouldn't (?) kid can still grow if same 'em

at-woman tear face; fight: smash his face in

hate-you; if bigger-would fuck you up

FAMILY HISTORY:
Father: "PMC-in office;" "Ed.-HS diploma, pretty sure.
9 Boy wrote: n/t

Mother: "no work;" "ed- 9th gr."
9 Boy wrote: my mo. doesn't-like to hit me

Siblings: Brothers: - two (9) Boy wrote: my bro.-is nice

No sisters

General History:
Boy born in California
8 Family living in S.J.
1/75-Family moved to Patterson, Ca.
9 Family returned to S.J.
Boy said: "Doesn't know what par. want him to do; whatever do is alright w/them."
Boy wrote: my mo. and fa.-are nice to me; think most about-my family; worry most about-my family; if don't get what want a home-I just don't get it; when wake at night-I go and eat

__HEALTH HISTORY:__ E-4

♀ Boy smokes marijuana and drinks beer.

__TEST PATTERNS:__ No previous IQ scores. V-P+ style (9 pts. diff)
Basic skills at intermediate level. Peak of 8.9 in recog. vocab. in 8th grade, but generally a V-M+ profile, with spelling lowest area (5.7)

WISC given at 15-8 FS 69 (V 67, P 76)
__Strengths:__ Awareness of visual detail in the physical environment (50 %ile)
Comprehension of human gestures and action sequences (50 %ile)

__Weak Areas:__ Manipulation of spatial designs (off scale)
Verbalizing moral and practical principles (1st %ile)
Copying and transposing meaningless marks according to a number code (2 %ile)
Storage of isolated facts (2 %ile)

Spotty information; DK disc. America and 'don't care'; water boil- 'stick it inside pot, turn on stove.'
Logical approach to practical and moral questions, prone to take position opposite from question, or response expected, and use tough sounding expressions. Superficial classifications, some relations rather than classes. Simplistic meager vocabulary responses, general. Rd. 30/40 words, defined 10 with 9 partials.

Able to do +, -, and X in his head. Rpt. 5 digits, rev. 4.

Picture completions spotty; problem with labels, prone to miss items relating to face and clothes. Able to do all but one cartoon sequence, but slow. Same for puzzles; adequate, but slow. Could do only simplest BD's in time- one done in overtime, then gave up. Coding loose, but consistent.

10 minutes late after lunch and couldn't remember room. Quiet, small, 'thinnish.'
Sentence completions scrawled in large hand, not too legible script; short sentences but spelling and syntax good. Some writeovers to clarify Omitted -friends thing, boys, other boys and girls, father isn.t, jealous of, unhappy because teacher, sister, when I get hurt. Crossed out - when people come to bisit - I behave.(2 words).
Smaller than ave. # of common teen concerns (42%. Two hotile 'you' responses in keeping with generally hostile-aggressive tone of his paper. Also responses relate to cutting. Main category is family.
Had a tough-guy frown most of the time. Sort of looks and acts uncooperative, indeed, does everything I say. Apt to say 'DK' too quickly, gave angry 'hard' answers like 'smash his face', 'DK and don't care'. Susp. M and T for missing detention on SAT

__SCHL OBSERVATIONS:__
♀ __Opportunity Program:__ "Boy is 9th grader according to yrs, but not credits. He was placed in spec. program due to his inability to function in a regular academic wrk program. He has difficulty in the areas of attendance, behavior, and wrk production. Boy rdg level was recorded at 4.2; Math tested at 5.0- both below normal standards. Boy's attendance pattern has improved much in the past (approx. 85 % in attendance.) His general behavior is of a very __passive__ nature- at times appears to be depressed. His ability to deal w/authority has improved, but still needs much attention. His grades aver. below his ability- D/F. Deficiencies in Rdg and Math. Fair attentiveness in class and attitude to peers and adults. Good class conduct, much improved. Poor on homework, tests, and grades. Sporadic about seeking help from tchr."
♂
Is taking Rdg II, Math I, Science I, Wrld Cultures, P.E., Leather I, and Ceramics.